VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a **Minor, Municipal** permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-00 et seq. The discharge results from treatment of kitchen and sanitary waste from Otter River Elementary School by a septic tank and sand filter system with nitrification, chlorination, and dechlorination. The permit action consists of updating boilerplate, revising ammonia limitations, and adding an E. coli limitation. (SIC Code: 4952)

1. **Facility Name and Address:**
Otter River Elementary School STP
1044 Otter River Drive
Goode, Virginia 24523

   Location: On Virginia State Route 221, approximately 5 miles east of the City of Bedford, approximately 0.5 miles east of intersection of Route 221 with Route 715.

2. **Permit No: VA0020851** Existing Permit Expiration Date: July 6, 2008

3. **Owner Contact:** Name: Mr. Dennis W. Overstreet Title: Director of Maintenance
Telephone No: (540)586-1045 ext. 237

4. **Application Complete Date:** January 4, 2008
Permit Drafted By: Kevin A. Harlow Date: May 15, 2008
DEQ Regional Office: West Central Regional Office
Reviewer's Signature: _____ Date: 5/27/08
Public Comment Period Dates: 6/4/2008 – 7/5/2008

5. **Receiving Waters Classification:**
Receiving Stream: Unnamed Tributary to Big Otter River River Basin: Roanoke River
River Subbasin: Roanoke River Section: 5a Class: III Special Standards: PWS
7-Day, 10-Year Low Flow: 0.0 MGD 7-Day, 10-Year High Flow: 0.0 MGD
1-Day, 10-Year Low Flow: 0.0 MGD 1-Day, 10-Year High Flow: 0.0 MGD
30-Day, 5-Year Low Flow: 0.0 MGD Tidal: No 303(d) Listed: No

   Attachment A contains a copy of the flow frequency determination memorandum.

6. **Operator License Requirements:** None

7. **Reliability Class:** I

8. **Permit Characterization**:
( ) Private ( ) Interim Limits in Other Document ( ) Federal ( ) Possible Interstate Effect
( ) State (X) POTW ( ) PVOTW

9. **Wastewater Treatment System:** A description of the wastewater treatment system is provided below. See **Attachment B** for wastewater treatment schematics and **Attachment C** for a copy of the site visit report. **Table I** lists the treatment units associated with the discharge.

The system is a 4,500 gallon-per-day biological treatment system which includes a grease trap, septic tanks, dosing tank with dual alternating siphons, distribution box, four sand filters operated in parallel, a nitrification unit, a chlorine contact tank with single point type injection, and tablet dechlorination.

10. **Sewage Sludge Use or Disposal:** No biosolids are generated by this facility as defined in 12 VAC 5-585-10 et seq. Septage from the septic tanks is regularly pumped and hauled for further treatment at the Roanoke Regional Water Pollution Control Plant.

11. **Discharge Location Description:** A USGS topographic map which indicates the proposed discharge location, any significant dischargers, any water intakes, and other items of interest is included in **Attachment D**. The latitude and longitude of the proposed discharge is N 37° 21' 51", E 79°25'56".

Name of Topo: Goode Number: 107C

12. **Material Storage:** Chlorine and a dechlorination material will be stored on site in a locked storage unit.

13. **Ambient Water Quality Information:** Memoranda or other information which helped to develop permit conditions are listed below.

See **Attachment A** for a copy of the May 15, 2008, memorandum for a summary of the flow frequencies.

There is no chemical data available for the stream at the perennial point. However, background temperature, pH, and hardness data are available for STORET Station 4ABOR016.26. This station is located on the Big Otter River at the Route 724 bridge in Bedford County. The 90th percentile pH and temperature values were derived from data collected from 1996 through 2001. **Attachment E** contains the STORET data.

14. **Antidegradation Review and Comments**: Tier I ___ Tier II _X___ Tier III _____

The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier I or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier II water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier II waters is not allowed without an evaluation of the economic and social impacts. Tier III water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with Tier determination. Although the receiving stream, an unnamed tributary to Big Otter River, is not listed on Part I of the 303(d) list for exceedance of water quality criteria, it is within the Big Otter River/Elk Creek Watershed (VAW-L25R) that has a TMDL plan to address a bacteria impairment. Guidance Memorandum 00-2011 states that non-attainment of the bacteria criteria is not to be "used to establish the tier category of a water unless there is clear and convincing evidence that the elevated bacteria numbers are due to inadequately disinfected human

waste." The TMDL Study identifies the primary source of the impairment as agricultural nonpoint sources and wildlife. Therefore the unnamed tributary to Big Otter River is considered to be a Tier 2 water.

For purposes of aquatic life protection in Tier II waters, "significant degradation" means that no more than 25 percent of the difference between the acute and chronic aquatic criteria values and the existing quality (unused assimilative capacity) may be allocated. For purposes of human health protection, "significant degradation" means that no more than 10 percent of the difference between the human health criteria and the existing quality (unused assimilative capacity) may be allocated. The antidegradation baseline for aquatic life and human health are calculated for each pollutant as follows:

Antidegradation baseline (aquatic life) = 0.25 (WQS – existing quality) + existing quality

Antidegradation baseline (human health) = 0.10 (WQS – existing quality) + existing quality

Where:
"WQS" = Numeric criterion listed in 9 VAC 25-260-5 et seq. for the parameter analyzed
"Existing quality" = Concentration of the parameter being analyzed in the receiving stream

These "antidegradation baselines" become the new water quality criteria in Tier II waters and effluent limits for future expansions or new facilities must be written to maintain the antidegradation baselines at the perennial point for each pollutant. Antidegradation baselines have been calculated as described above and included in **Attachment F**.

Water quality based effluent limits for pH, total residual chlorine (TRC), and ammonia have been established in compliance with antidegradation requirements set forth in 9 VAC 25-260-30 of the water quality standards regulations.

15. **Site Inspection:** Date: 02/08/2008 Performed by: Kevin Harlow
Attachment C contains a copy of the site visit memorandum.

16. **Effluent Screening and Limitation Development:** DEQ Guidance Memorandum 00-2011 was used in developing all water quality based limits pursuant to water quality standards (9 VAC 25-260-5 et seq). **Attachment E** contains data from STORET Station 4ABOR016.26 used to calculate the 90th percentile values for pH and temperature. Refer to **Attachment F** for the wasteload allocation spreadsheet and effluent limit calculations. See **Table III** for a summary of final limits and monitoring requirements.

A. **Mixing Zone**

The MIXER program was run to determine the percentage of the receiving stream flow that could be used in the wasteload allocation calculations. The program output indicated that 100 percent of the 7Q10 and 100 percent of 1Q10 may be used for calculating acute and chronic wasteload allocations (WLAs). A copy of the print out from the MIXER run is enclosed in **Attachment F**.

B. **Effluent Limitations for Conventional Pollutants**

Flow -- The permittee submitted a VPDES Permit Application for a design flow of 0.0045 MGD. In accordance with the VPDES Permit Manual, flow is to be estimated and recorded per day of discharge in accordance with the recommendations in the VPDES Permit Manual.

pH -- The pH limits of **6.0 S.U. minimum and 9.0 S.U. maximum** are required. These limits are based upon the water quality criteria in 9 VAC 25-260-50 for Class III receiving waters and are in accordance with federal technology-based guidelines, 40 CFR Part 133, for secondary treatment. Grab samples shall be collected once per day of discharge in accordance with the recommendations in the VPDES Permit Manual.

Total Suspended Solids (TSS) -- The Total Suspended Solids limits of **a monthly average of 30 mg/L (510 grams per day) and maximum weekly average of 45 mg/L (760 grams per day)** are technology-based secondary treatment standard limits and are unchanged from previous permit. Grab samples shall be collected once per month of discharge in accordance with the recommendations in the VPDES Permit Manual.

Biochemical Oxygen Demand (BOD_5) -- The BOD_5 limits from the previous permit have been continued. The limits were based on the EPA's proposed technology based secondary treatment requirements of **a monthly average limitation of 24 mg/L and a maximum weekly average limitation of 36 mg/L**. These values were proposed prior to the adoption of the final secondary treatment standard levels of 30 mg/L and 45 mg/L. Once effective the limits have not been changed. As an intermittent discharging plant on a receiving stream with a 7Q10 of zero, it is inappropriate to use the Agency's desktop DO model to establish effluent BOD_5 limits. A loading allocation of 0.4 kg/day of BOD_5 is included in Part II of the Roanoke River Basin Water Quality Management Plan, 9VAC25-720-80 (**Attachment E**). The loading limitations of **a monthly average of 400 grams per day and a maximum weekly average of 610 grams per day** meets this allocation. An excerpt of the Plan is included in **Attachment F**. Grab samples shall be collected once per month of discharge in accordance with the recommendations in the VPDES Permit Manual.

E. Coli – Chlorine disinfection is used at this facility. In accordance with 9 VAC 25-260-170, all sewage discharges shall disinfect to achieve the applicable bacteria concentrations prior to discharge. A bacteria TMDL has been developed for the Big Otter River watershed that assigned a bacteria wasteload allocation (**Attachment E**) to this facility. The WLA is based upon the design flow, 8760 hours per year operation, and the applicable monthly average bacteria limitation. In order to demonstrate that the facility is meeting the TMDL WLA, an E. coli limit equal to the applicable water quality standard is added. The applicable water quality standard for E. coli sampled multiple times during a month is a monthly average, calculated as a geometric mean, of 126 N/100 ml. Proper disinfection, compliance with the water quality standards, and compliance with the TMDL WLA will be assured with twice per discharge-month E. coli monitoring in accordance with the recommendations in the VPDES Permit Manual.

C. **Effluent Limitations for Toxic Pollutants**

Ammonia as Nitrogen -- The WLA spreadsheet was recalculated using updated receiving stream data, effluent data, and water quality standards. Given that the discharge is intermittent, limit evaluation is performed to protect acute water quality standards. The acute WLA for ammonia of 10.0 mg/L was input into the agency STATS program together with one datum value of 9 mg/l to force the program to calculate a limit. The STATS program determined that an acute-based limit of a 10.0 mg/L is needed for ammonia as nitrogen. This calculated limit is less stringent than the permit limit for ammonia due to a change in the water quality standards for ammonia. However, the current ammonia limit of a **maximum weekly average and monthly average of 6.1 mg/L** can not be relaxed due to anti-backsliding and is continued in this permit. **Attachment F** contains the spreadsheet used to calculate the stream standards and wasteload allocations and the results of the reasonable potential determination for ammonia (STATS program). **Attachment F** also includes the 2003 WLA spreadsheet and reasonably potential analysis for ammonia that are the basis for the current permit limit. Grab samples shall be collected once per month of discharge in accordance with the recommendations in the VPDES Permit Manual.

Total Residual Chlorine (TRC) -- The facility uses chlorination as the disinfection method. TRC limits are water quality based and are calculated in accordance with Guidance Memo 00-2011 procedures. As an intermittent discharge to an intermittent stream, the reasonable potential analysis uses only the acute WLA. The acute WLA was input into the agency STATS.exe statistical software package together with one datum value of 20 mg/l (in accordance with GM #00-2011) to force the program to calculate the permit limits for TRC. TRC toxic limits for the effluent are a **maximum weekly average of 11.3 µg/l** and **monthly average of 9.4 µg/l**. Monitoring is once per day by grab sample at the effluent in accordance with the recommendations in the VPDES Permit Manual. See **Attachment F** for the WLA spreadsheet and STATS program output.

D. **Reduced Monitoring:** All permit applications received after May 4, 1998, are to be considered for reduction in effluent monitoring frequency. GM 98-2005 states that "only facilities having exemplary operations that consistently meet permit requirements should be considered for reduced monitoring." No effluent monitoring has been reduced in this permit issuance because the permittee received Warning Letters W2003-11-W-1008, W2003-12-W1004, W2005-09-W-1002, W2005-12-W-1009, and W2006-09-W-1010 as well as Notice of Violations W2004-02-W-0002, W2004-03-W-0002, and W2006-11-W-0004.

17. **Basis for Sludge Use and Disposal Requirements:** Since the facility will transport septage to the Roanoke Regional Water Pollution Control Plant, there are no limits or monitoring requirements associated with sludge use or disposal beyond compliance with the Sludge Management Plan approved with the issuance of the permit.

18. **Antibacksliding Statement:** All limits in this reissuance are at least as stringent as the limits in the previous permit.

19. **Compliance Schedules:** No compliance schedules are included in this permit.

20. **Special Conditions:** A brief rationale for each special condition contained in the permit is given below.

A. **Additional TRC Limitations and Monitoring Requirements (Part I.B)**

Rationale: Required by Sewerage Regulations, 9 VAC 25-790, bacteria standards; other waters. Also, 40 CFR 122.41(e) requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment in order to comply with the permit. This ensures proper operation of chlorination equipment to maintain adequate disinfection.

B. **Compliance Reporting under Part I.A and Part I.B (Part I.C.1)**

Rationale: Authorized by VPDES Permit Regulation, 9 VAC 25-31-190 J 4 and 220 I. This condition is necessary when toxic pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.

C. **95% Capacity Reopener (Part I.C.2)**

Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-200 B 2 for all POTW and PVOTW permits.

D. **Operation and Maintenance Manual Requirement (Part I.C.3)**

Rationale: Required by Code of Virginia э 62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9 VAC 25-31-190 E.

E. **Reliability Class (Part I.C.4)**

Rationale: Required by Sewage Collection and Treatment Regulations, 9 VAC 25-790 for all municipal facilities.

F. **Licensed Operator Requirement (Part I.C.5)**

Rationale: The VPDES Permit Regulation, 9 VAC 25-31-200 D and the Code of Virginia § 54.1-2300 et seq, Rules and Regulations for Waterworks and Wastewater Works Operators (18 VAC 160-20-10 et seq.), require licensure of operators.

G. **Sludge Reopener (Part I.C.6)**

Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-220.C.4 for all permits issued to treatment works treating domestic sewage.

H. **CTO, CTC Requirement (Part I.C.7)**

Rationale: Required by Code of Virginia ə 62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790.

I. **Closure Plan (Part I.C.8)**

Rationale: In accordance with State Water Control Law Section 62.1-44.19, this condition is used to notify the owner of the need for a closure plan where a treatment works is being replaced or is expected to close.

J. **Sludge Use and Disposal (Part I.C.9)**

Rationale: The permittee has proposed to periodically transport septage to the Roanoke Regional Water Pollution Control Plant. VPDES Permit Regulation, 9 VAC 25-31-100 P; 220 B2; and 420 and 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on sludge use and disposal practices and to meet specified standards for sludge use and disposal. Technical requirements may be derived from the Department of Health's Biosolids Use Regulations, 12 VAC 5-585-10 et seq. This special condition, in accordance with Guidance Memorandum No. 97-004, clarifies that the Sludge Management Plan approved with the issuance of this permit is an enforceable condition of the permit.

K. **Total Maximum Daily Load (TMDL) Reopener (Part I.C.10)**

Rationale: Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The re-opener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.

L. **Conditions Applicable to All VPDES Permits (Part II)**

Rationale: The VPDES Permit Regulation, 9 VAC 25-31-190, requires all VPDES permits to contain or specifically cite the conditions listed.

21. **Changes to the Permit:** Table II summarizes changes in final effluent limitations and monitoring requirements for outfall 001 as compared to the previously issued permit. Permit language has been updated to reflect the recommendations in the VPDES Permit Manual. Permit conditions in the 2003 permit beginning with I.E have been renumbered to I.C due to the deletion of old Part I.C and Part I.D.

Deletions:

Old Part I.C – Bacteria Effluent Limitations and Monitoring Requirements – The disinfection demonstration has been completed.

Old Part I.D – Compliance Schedule for Ammonia – Compliance with the final ammonia limitations in the 2003 has been achieved.

Old Part I.E.3 – Indirect Dischargers – The facility does not have any indirect dischargers.

Additions:

Part I.C.10 – TMDL Reopener: Added in accordance with the VPDES Permit Manual.

Changes:

Old Part I.E.7 – CTC, CTO, and O&M Manual Requirements: This special condition has been split into two separate special conditions, Part I.C.3 – O&M Manual Requirements and Part I.C.7 – CTC, CTO Requirements as recommended in the VPDES Permit Manual.

22. **Variances/Alternate Limits or Conditions:** No variances or alternate limits or conditions are included in this permit.

23. **Regulation of Treatment Works Users:** There are no industrial users contributing to the treatment works.

24. **Public Notice Information required by 9 VAC 25-31-290 B:**

All pertinent information is on file and may be inspected, and arrangements made for copying by contacting Kevin A. Harlow at:

Virginia DEQ
West Central Regional Office
3019 Peters Creek Road
Roanoke, VA 24019
540-562-6700
kaharlow@deq.virginia.gov

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

25. **303(d) Listed Segments (TMDL):** The Otter River Elementary School WWTP discharges into an unnamed tributary to the Big Otter River in the Big Otter River/Elk Creek Watershed (VAW-L25R).

Although the unnamed tributary to Big Otter River is not included on the 303(d) list as impaired, a TMDL for the Big Otter River/Elk Creek Watershed was developed to address bacteria impairments in segments of the Big Otter River, Elk Creek, and North Otter Creek. The 2006 Impaired Waters report for the Roanoke and Yadkin River basins, Cause Group ID: L25R-01-BAC (**Attachment E**), details the extents of the impairments. The Big Otter River TMDL was developed and subsequently approved by EPA on 02/02/2001. The TMDL Study identifies the primary source of the bacteria impairment as agricultural nonpoint sources and wildlife. This permit has limits for E. coli of 126 N/100 mL monthly average (geometric mean) that are in compliance with the TMDL.

26. **Additional Comments:**

A. **Previous Board Action:** None

B. **Staff Comments:** The discharge is not controversial. The discharge is not addressed in any planning document.

C. **Public Comments**: No comments were received during the public comment period.

Table I
DISCHARGE DESCRIPTION

Outfall Number	**Discharge Source**	**Treatment (Unit by Unit)**	**Flow (Design) (MGD)**
001	Otter River Elementary School STP	grease trap, septic tanks, dosing tank with dual alternating siphons, distribution box, four sand filters operated in parallel, a nitrification unit, a chlorine contact tank with single point type injection, and tablet dechlorination	0.0045

TABLE II: OUTFALL 001 CHANGE TABLE FOR THE FINAL LIMITS

Parameter Changed	Monitoring Requirement Changed		Effluent Limits Changed		Reason for Change	Date
	FROM	TO	FROM	TO		
Ammonia	1/D-Month	1/D-Month	6.1 mg/l Daily Max. Avg. 6.1 mg/L Monthly Avg.	6.1 mg/l Weekly Avg. 6.1 mg/L Monthly Avg.	Limitations on toxics at municipal facilities should be expressed as weekly average and monthly average limits.	KAH 5/14/08
E.coli	NA	2/D-Month	NA	126 N/100 mL Monthly Avg. (geometric mean)	Facility discharges into watershed VAW-L25R that has a TMDL for bacteria.	KAH 5/19/08

Table III
BASIS FOR FINAL LIMITATIONS

OUTFALL: 001
DESIGN FLOW: 0.0045 MGD

( ) Interim Limitations
(x) Final Limitations

Effective Dates - From: Effective Date
To: Expiration Date

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/D-Day	Estimate
pH (Standard Units)	1, 3	NA	6.0	NA	9.0	1/D-Day	Grab
BOD_5	2,4	24 mg/l 400 g/d	36 mg/l 610 g/d	NA	NA	1/D-Month	Grab
Total Suspended Solids	1	30 mg/l 510 g/d	45 mg/l 760 g/d	NA	NA	1/D-Month	Grab
Ammonia as Nitrogen (NH3-N)	3	6.1 mg/l	6.1 mg/L	NA	NA	1/D-Month	Grab
Total Residual Chlorine	3	9.4 µg/l	11.3 µg/l	NA	NA	1/D-Day	Grab
E. coli (N/100 mL)	3	126*	NA	NA	NA	2/D-Month	Grab

* Geometric Mean. Samples shall be obtained between 10 a.m. and 4 p.m.
1/D-Month = Once per Discharge Month NA = Not Applicable
NL = No Limitations, monitoring only 1/D-Day = Once per Discharge Day

The basis for the limitations codes are:
1. Federal Effluent Guidelines: (Secondary Treatment Requirement)
2. Best Professional Judgement
3. Water Quality Standards
4. Roanoke River Basin Water Quality Management Plan (9VAC25-720-80)
5. Other

Attachments

A. Flow Frequency Memorandum
B. Wastewater Treatment Diagrams
C. Site Visit Report
D. USGS Topographic Map
E. Ambient Water Quality Information
   - STORET Data (Station 4ABOR016.26)
   - 2006 Impaired Waters Report, L25R-01-BAC
   - Big Otter River TMDL Addendum (p.1)
F. Wasteload and Limit Calculations
   - Mixing Zone Calculations (MIX)
   - Effluent Data
   - Wasteload Allocation Spreadsheet
   - STATS Program Results
   - Basis for Ammonia Limitations
   - Antidegradation Baselines

Attachment A

Flow Frequency Memorandum

M E M O R A N D U M

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

WEST CENTRAL REGIONAL OFFICE

3019 Peters Creek Rd. Roanoke, VA 24019

SUBJECT: Flow Frequency Determination
Otter River Elementary School STP - #VA0020851

TO: Permit File

FROM: Kevin Harlow

DATE: May 15, 2008

The Otter River Elementary School STP discharges to an unnamed tributary of the Big Otter River near Goode, VA. Stream flow frequencies are required at this site by the permit writer for the purpose of calculating effluent limitations for the VPDES permit.

At the discharge point, the receiving stream is shown to be an intermittent on the USGS Goode Quadrangle topographic map. The flow frequencies for intermittent are 0.0 cfs for the 1Q10, 7Q10, 30Q5, high flow 1Q10, high flow 7Q10, harmonic mean, etc. Flow frequencies have been determined for the first perennial reach on the unnamed tributary downstream of the discharge point.

The USGS conducted several flow measurements on the Little Otter River from 1951 to 1954, in 1977, and from 1981 to 1985. The measurements were made at the Route 122 bridge near Bedford, VA. The measurements made by the USGS correlated very well with the same day daily mean values from the continuous record gage on the Big Otter River near Evington, VA #02061500. The measurements and daily mean values were plotted by the USGS on a logarithmic graph and a best fit line was drawn through the data points. The required flow frequencies from the reference gage were plotted on the regression line and the associated flow frequencies at the measurement site were determined from the graph.

The flow frequencies at the discharge point were determined by using the values at the measurement site and adjusting them by proportional drainage areas. The data for the reference gage, the measurement site and the discharge point are presented below:

Big Otter River near Evington, VA (#02061500):
Drainage Area = 320 mi^2

1Q10 = 18 cfs (12 MGD)	High Flow 1Q10 = 85 cfs (55 MGD)
7Q10 = 21 cfs (14 MGD)	High Flow 7Q10 = 98 cfs (63 MGD)
30Q5 = 48 cfs (31 MGD)	High Flow 30Q10 = 131 cfs (85 MGD)
30Q10=31 cfs (20 MGD)	Harmonic Mean = 132 cfs (85 MGD)
	Annual Average = 216 cfs (140 MGD)

Little Otter River at Rt. 122 near Bedford, VA (#02061200):

Drainage Area = 18.26 mi^2

1Q10 = 1.0 cfs (0.64 MGD)	High Flow 1Q10 = 4.5 cfs (2.9 MGD)
7Q10 = 1.1 cfs (0.74 MGD)	High Flow 7Q10 = 5.1 cfs (3.3 MGD)
30Q5 = 2.6 cfs (1.7 MGD)	High Flow 30Q10 = 6.8 cfs (4.4 MGD)
30Q10=1.7 cfs (1.1 MGD)	Harmonic Mean = 6.9 cfs (4.4 MGD)
	Annual Average = 11.1 cfs (7.2 MGD)

UT to Big Otter River at the perennial point:

Drainage Area = 0.23 mi^2

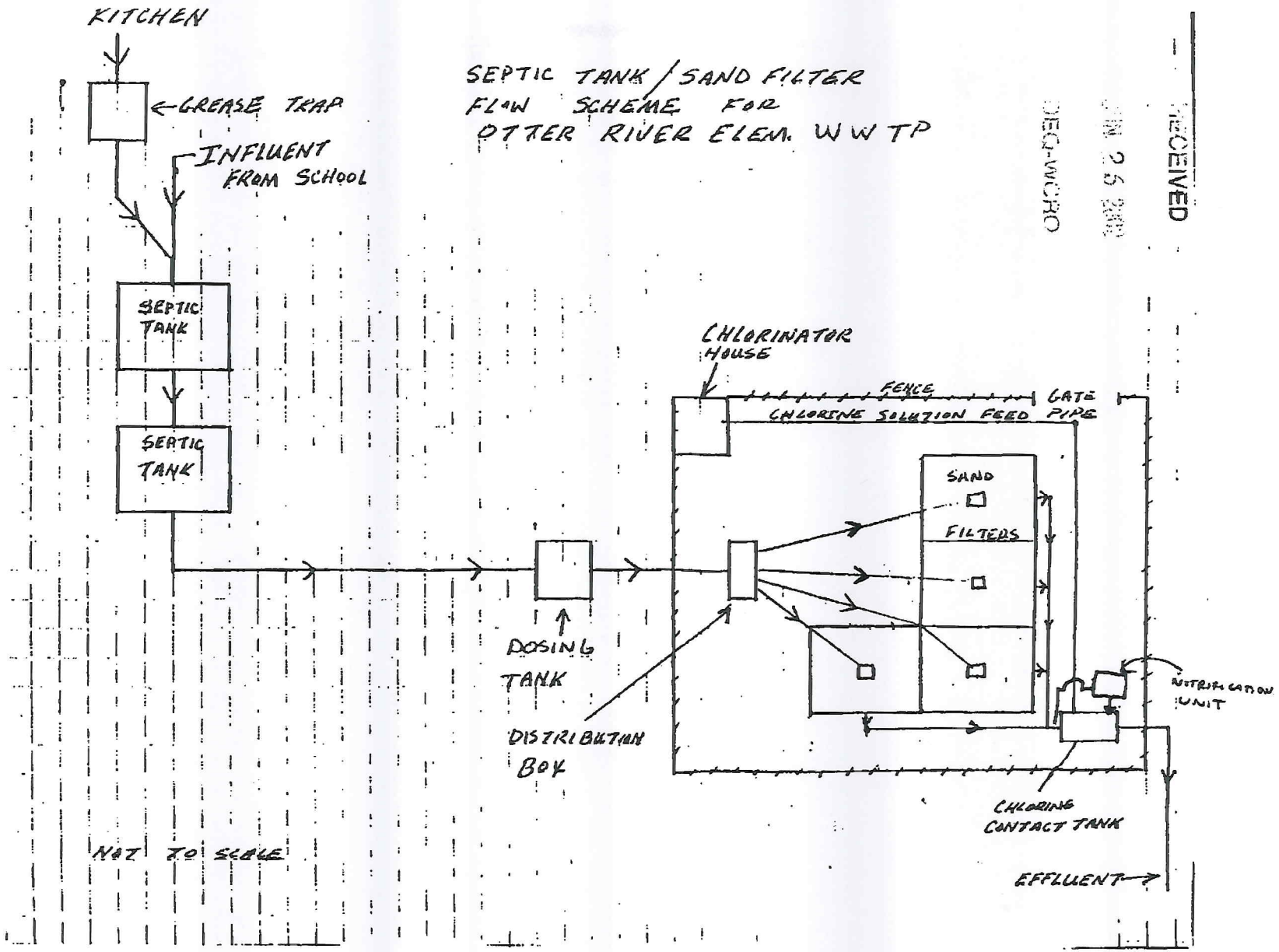
1Q10 = 0.012 cfs (0.0080 MGD)	High Flow 1Q10 = 0.056 cfs (0.036 MGD)
7Q10 = 0.014 cfs (0.0093 MGD)	High Flow 7Q10 = 0.065 cfs (0.042 MGD)
30Q5 = 0.032 cfs (0.021 MGD)	High Flow 30Q10 = 0.086 cfs (0.056 MGD)
30Q10=0.021 cfs (0.014 MGD)	Harmonic Mean = 0.087 cfs (0.056 MGD)
	Annual Average = 0.14 cfs (0.091 MGD)

The high flow months are January through May.

This analysis assumes there are no significant discharges, withdrawals or springs influencing the flows in the unnamed tributary upstream of the perennial point.

Attachment B

Wastewater Treatment Diagrams



Original

Attachment C

Site Visit Report

M E M O R A N D U M
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY
WEST CENTRAL REGIONAL OFFICE
WATER DIVISION

3019 Peters Creek Road **Roanoke, Virginia 24019-2738**

SUBJECT: Site visit for VPDES Permit Reissuance - VA0020851
Otter River Elementary School WWTP

To: Permit files VPDES permit VA0020851

From: Kevin A. Harlow, Environmental Engineer Sr.

Date: February 8, 2008

On Monday, February 8, 2008, the writer performed a site visit at the Otter River Elementary School STP. Also present during the visit was Jennifer Mitchell with the Bedford County PSA.

The treatment facility consists of a grease trap, two septic tanks, dosing tank with dual alternating siphons, distribution box, four biological sand filter beds operating in parallel followed by a nitrification unit, chlorine contact tank, and tablet dechlorination.

No actual influent flow rates are available. DMR flow reporting is estimated based on the number of students. Septic tanks and grease traps are pumped as needed. The grease traps and septic tanks were not opened for inspection during this visit. The dosing siphon, sand filters, nitrification unit, and chlorination facilities were all fenced and the gate locked.

The chlorine and dechlorination material is stored in a locked storage room inside the fenced area. As noted above there was no discharge from the facility during our visit so no measurements were recorded from the visit. The discharge is through a PVC pipe to an unnamed tributary to Big Otter River. The receiving stream was a small defined channel feeding into a larger much deeper drainage way. In the pasture area immediately above the discharge point it could not be determined if there was any perennial flow.

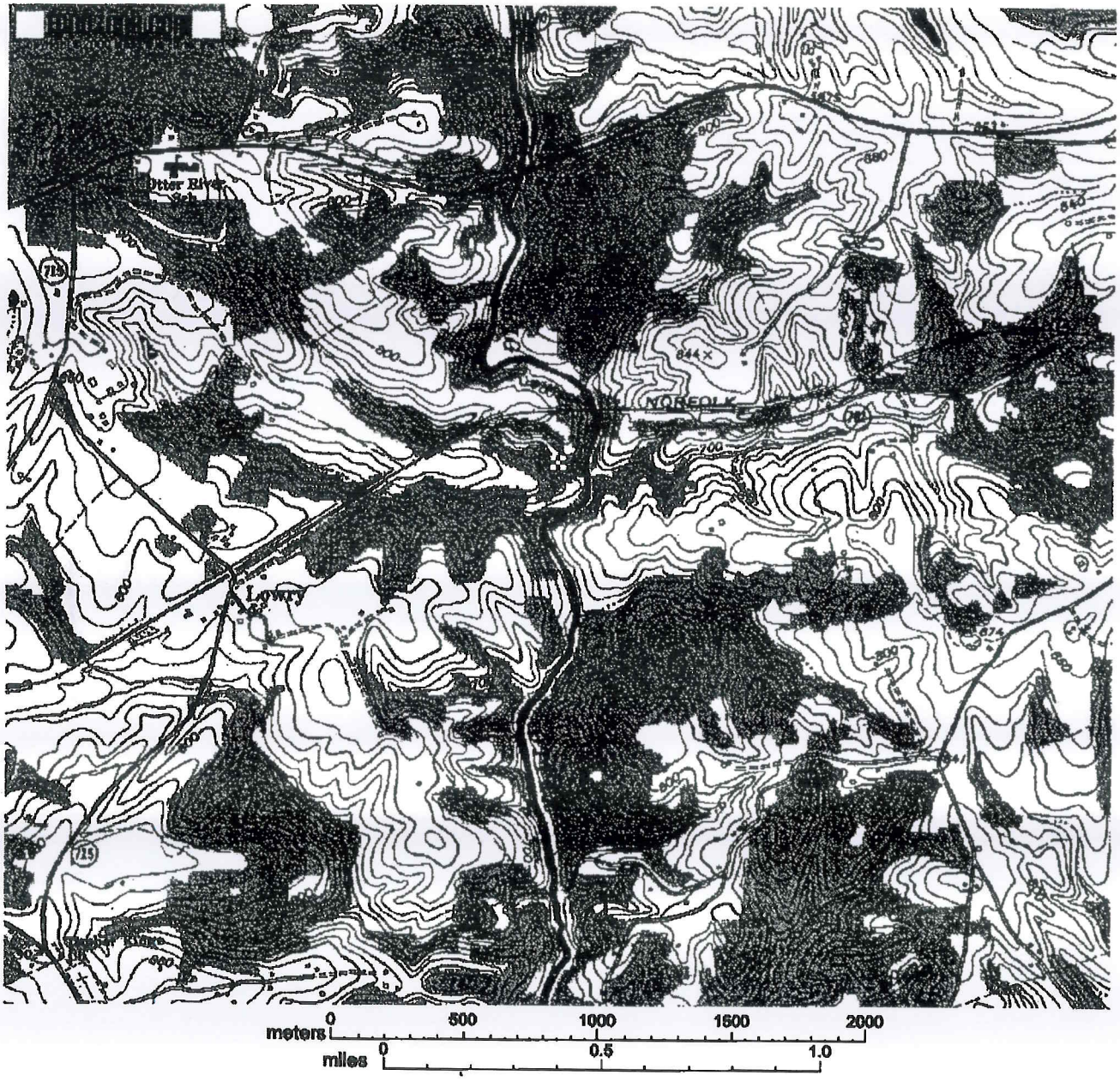
Test equipment is stored on the truck used by the operator to visit each facility daily. The Operations and Maintenance manual for the facility is maintained by the PSA. The operator was not asked about maintenance records during the visit.

Attachment D

USGS Topographic Map

TopoZone.com

Target is UTM 17 640085E 4135166N - **GOODE** quad [Quad Info]



Attachment E

Ambient Water Quality Information

- **STORET Data (Station 4ABOR016.26)**
- **2006 Impaired Waters Report, L25R-01-BAC**
- **Big Otter River TMDL Addendum, Page 1**

Otter River Elementary School STP - VA0020851
Data Collected on Big Otter River at Station ID: 4ABOR016.26

Date Time	Hardness (mg/l as CaCO3)	Temp Celsius	Field pH
5/3/2001 11:00	21.2	20.7	8.3
3/14/2001 10:30	27.8	10.7	8.4
1/16/2001 10:30	23	1	8.4
11/2/2000 10:30	31.7	8.8	8.8
9/28/2000 10:00	28.3	15	
7/17/2000 10:00	36	23.7	6.9
4/25/2000 9:45	17	11.97	6.82
4/4/2000 15:30	24	16.6	7.9
3/20/2000 16:30	27	7.5	7.16
2/2/2000 15:00	30.1	1	7.7
12/7/1999 15:00	27.8	7.6	7.8
10/4/1999 15:30	26.6	16.9	7.9
8/2/1999 15:00	38.3	30	7.8
6/2/1999 15:00	28	25	8.5
3/1/1999 15:00	36	7.5	
12/2/1998 15:00	31	7.5	8.6
9/1/1998 15:30	32.7	26	8.5
6/2/1998 15:30	26.4	24.3	7.9
3/3/1998 15:00	36.5	9.4	7.7
12/2/1997 14:30	29.7	8	
9/16/1997 14:30	33.7	21.7	8
6/3/1997 14:30	29.2	17.6	7.4
3/5/1997 15:00	24.7	10	7.8
12/3/1996 15:30	48	6.8	7.9
9/10/1996 15:00	28	24.2	7.3
Average	29.708		
90%'ile		24.72	8.5

Roanoke and Yadkin River Basins

Cause Group ID: **L25R-01-BAC** **Big Otter River, Elk Creek and North Otter Creek**

2006 TMDL Group Codes: 00118

Location: Big Otter River from the mouth of North Otter Creek downstream to the confluence of the Little Otter River. Elk Creek from the Rt. 644 crossing at Perrowville downstream to the Elk Creek confluence on the Big Otter River. North Otter Creek from near the Rt. 122 crossing downstream to the its mouth on the Big Otter River.

Note: The original 1998 bacteria 7.28 mile impairment on Elk Creek is extended with the 2004 IR to include the lower portion of North Otter Creek and the Big Otter River.

City / County: Bedford Co

Use(s): Recreation

Cause(s) / VA Category: Fecal Coliform / 4A

The Elk Creek /Big Otter River Bacteria Total Maximum Daily Load (TMDL) Study with allocations is complete receving US EPA approval on 2/02/2001 and SWCB approval on 6/17/2004 [Fed. ID 1498/9595] (formerly VAW-L25R-01). The waters are therefore Category 4A for bacteria. The Bacteria Study encompasses the Little Otter drainage (L26R) including Machine Creek (L26R), Big Otter drainage (L23R, L24R, L27R, L28R) including Elk (L25R) and Sheep Creeks (L23R). North Otter Creek (L24R) is not specifically addressed by the Bacteria TMDL Study. However, allocation scenario development is for the entire drainage to provide pollutant reductions for all watersheds contributing to the bacteria impairment. Escherichia coli (E.coli) will replace the fecal coliform bacteria 303(d) Listing as the indicator with sufficient E.coli data as per Water Quality Standards [9 VAC 25-260-170. Bacteria; other waters]. The entirety of the approved study and allocations can be viewed at http://www.deq.va.gov.

The 2004 extension is the result of additional data collections made while conducting the TMDL Study. The bacteria impairment encompasses the original Elk Creek 7.28 miles and the total 2004 extension of 30.20 miles. The original 1998 and 2004 extensions totaling 37.48 miles are described below:

The 1998 Elk Creek (L25R) original 7.28 mile bacteria upper limit is at Rt. 622 west of Forest (Forest Quad 37°20'25" / 79°21'33") and ending at its mouth on the Big Otter River (Goode Quad 37°18'37" / 79°23'38"). The 2004 extension runs from near Perrowville (37°24'58" / 79°21'07") downstream to the Rt. 622 crossing adding 11.88 miles. The original 1998 and 2002 303(d) Listing basis is for fecal coliform bacteria ambient data collections at 4AECR003.02. These data show contravention of the former WQS 1000 cfu/100 ml fecal coliform criterion in greater than 25 percent of the samples collected.

4AECR007.42- (intersection of Routes 643 and 705) Two FC samples exceed the 400 cfu/100 ml instantaneous criterion at 4600 and 7000 cfu/100 ml.

4AECR003.02- (Rt. 668 Bridge) No additional data beyond 2004 IR. 2004 IR reports eight of 20 FC samples exceed the 400 cfu/100 ml instantaneous criterion with exceeding values ranging from 500 cfu/100 ml to greater than 160,000.

The 2004 North Otter Creek (L24R) extension is 6.58 miles. The extension includes the lower portion of North Otter Creek on the Sedalia Quad (37°27'12" / 79°27'55") from near the Route 122 crossing extending dowstream to its mouth on the Big Otter River (Sedalia Quad (37°23'04" / 79°26'40").

4ANOT001.06- (Route 644 Bridge) No additional data beyond the 2004 IR. Seven of 20 FC samples within the 2006 data window exceed the 400 cfu/100 ml instantaneous criterion. The range of exceedence is from 700 cfu/100 ml to greater than 8000. The 2004 IR reports 10 of 28 samples in excess of the current 400 cfu/100 ml criterion for fecal coliform bacteria. The range of exceedence is from 500 cfu/100 ml to greater than 8000.

Big Otter River (L25R; 2004 extension of 11.74 miles.)
The Big Otter River (L25R) from the confluence of North Otter Creek (Sedalia Quad 37°27'12" / 79°27'55") river mile

Roanoke and Yadkin River Basins

32.01 downstream to the confluence of Little Otter River on the Big Otter River (Goode Quad 37°16'28" / 79°24'19") river mile 20.27.

4ABOR029.74- (Rt.221 Bridge intersection Rt.'s 221 & 670) Two of two FC samples exceed the 400 cfu/100 ml instantaneous criterion. Exceeding values are 2100 and 4900 cfu/100 ml.

4ABOR024.46- (Rt. 460 Bridge near intersection Rt.'s 460 & 706) Two of two FC samples exceed the 400 cfu/100 ml instantaneous criterion. Exceeding values are 7000 cfu/100 ml and greater than 160,000.

Assessment Unit / Water Name / Description	Cause Category / Name		Cycle First Listed	TMDL Schedule	Size
VAW-L24R_NOT01A02 / North Otter Creek / North Otter Creek from the Rt. 122 crossing at Coltons Mill downstream to the North Otter Creek mouth on the Big Otter River.	4A	Fecal Coliform	2004	2001	6.58
VAW-L25R_BOR01A02 / Big Otter River Lower / Big Otter River mainstem from the mouth of the Little Otter River upstream to the Elk Creek confluence on the Big Otter River.	4A	Fecal Coliform	2004	2001	4.43
VAW-L25R_BOR02A02 / Big Otter River Upper 1 / Big Otter River mainstem from the confluence of Elk Creek upstream to the mouth of Roaring Run.	4A	Fecal Coliform	2004	2001	5.95
VAW-L25R_BOR03A04 / Big Otter River Upper 2 / Confluence of North Otter Creek downstream to the mouth of Roaring Run.	4A	Fecal Coliform	2004	2001	1.36
VAW-L25R_ECR01A00 / Elk Creek / Elk Creek mainstem from its mouth on the Big Otter River upstream to the Rt. 622 crossing west of Forest, VA.	4A	Fecal Coliform	1998	2001	7.28
VAW-L25R_ECR02A02 / Elk Creek Middle / Elk Creek mainstem from and unnamed tributary near Norwood (37°20'25" / 79°21'32") Rt. 622 crossing, upstream to near Perrowville (37°24'58" / 79°21'07") at another unnamed tributary.	4A	Fecal Coliform	2004	2001	11.88

Big Otter River, Elk Creek and North Otter Creek	Estuary (Sq. Miles)	Reservoir (Acres)	River (Miles)
Fecal Coliform - Total Impaired Size by Water Type:			37.48

Sources:

- Livestock (Grazing or Feeding Operations)
- On-site Treatment Systems (Septic Systems and Similar Decencentralized Systems)
- Unspecified Domestic Waste
- Wildlife Other than Waterfowl

Addendum to the Big Otter River Basin Fecal Coliform TMDLs (January 2001)

EPA's comments, as provided in their letter reviewing the fecal coliform TMDLs for five impaired segments in the Big Otter River basin, are re-stated in italics and followed by the particular response for each comment.

EPA: Section 5.2.1, States that there are two point sources (Gunnoe Sausage Company and Otter River Elementary School) in the Elk Creek watershed. However, section 5.3.2 states that there is only one permitted point source. It is mentioned that neither of these facilities discharge to the impaired segment of Elk Creek. How many point sources are there within the Elk Creek watershed? How was their load allocated to the Big Otter? For the allocation were the point sources modeled as discharging at their permitted concentration?

Response: There are two point sources for fecal coliform in the Elk Creek watershed: Gunnoe Sausage Company (VA0001449) and Otter River Elementary School (VA0020851). Neither of these contributed fecal coliform to the impaired segment on Elk Creek. Only the Gunnoe Sausage Company (VA0001449) was used in the simulations as a contributor to the impairment of the Lower Big Otter River. The Otter River Elementary School (VA0020851) was not used in the simulations for the Lower Big Otter River impairment because the design flow for this source was 0.0696 cfs, which was considered insignificant. The Gunnoe Sausage Company point source (VA0001449) was modeled as discharging fecal coliform at the permitted concentration for the allocation. Table 1 summarizes the flow and load information for Elk Creek. The point source load from Elk Creek was incorporated into the Lower Big Otter TMDL simulations as an upstream inflow. As modeled, the outflow from Elk Creek flows into Buffalo Creek, and the Buffalo Creek outflow is an inflow into the Lower Big Otter River.

Table 1. The hourly and annual loads from the point sources in the Elk Creek watershed.

PS Discharge	Flow (cfs)	Load (cfu/hr)	Annual Load[1] (cfu/yr)
VA0001449 [2]	0.6003	122,500,000	1.07×10^{12}
VA0020851 [2]	0.0696	14,200,000	1.24×10^{11}
Total			1.19×10^{12}

[1] Annual load is hourly load times 8,760 hr/yr

[2] Does not contribute to impaired segment in Elk Creek HUP.

EPA: Section 7.2.1, States that there are four permitted point sources in the Little Otter River watershed. However, in Section 7.3.2 it mentions that there are five permitted point sources, two of which were modeled for. Please verify the number of permitted point sources within this watershed. Was the Waste Load Allocation (WLA) set at a value that incorporates the permitted discharge of all of the permitted point sources? How was the loading from the facilities not modeled incorporated into the WLA and how was it determined that this additional loading would not affect the model? A WLA for each point source should be provided as an addendum to the report. A modeling run showing the effects of the non-modeled point sources should be provided with the addendum.

Attachment F

Wasteload and Limit Calculations

- Mixing Zone Calculations (MIX)
- Effluent Data
- Wasteload Allocation Spreadsheet
- STATS Program Results
- Basis for Ammonia Limitations
- Antidegradation Baselines

Mixing Zone Predictions for Bedford Co Otter River E.S. - VA0020851

Effluent Flow = 0.0045 MGD
Stream 7Q10 = .0093 MGD
Stream 30Q10 = .014 MGD
Stream 1Q10 = .008 MGD
Stream slope = .0146 ft/ft
Stream width = 4 ft
Bottom scale = 3
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = .0324 ft
Length = 263.27 ft
Velocity = .1647 ft/sec
Residence Time = .0185 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = .0387 ft
Length = 226.77 ft
Velocity = .1849 ft/sec
Residence Time = .0142 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = .0305 ft
Length = 277.05 ft
Velocity = .1583 ft/sec
Residence Time = .486 hours

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.

Bedford Co - Otter River E.S. WWTP - VA0020851

neter Desc	Due Date	Min	Max	10th %'ile	90th %'ile
PH	10-Oct-2003	7	7.7	7.07	7.63
PH	10-Nov-2003	7	7.5	7.05	7.45
PH	10-Dec-2003	6.6	8	6.74	7.86
PH	10-Jan-2004	7	8	7.10	7.90
PH	10-Feb-2004	7	8	7.10	7.90
PH	10-Mar-2004	7	8	7.10	7.90
PH	10-Apr-2004	6.8	8	6.92	7.88
PH	10-May-2004	6.5	8	6.65	7.85
PH	10-Jun-2004	6.5	7.5	6.60	7.40
PH	10-Jul-2004	6.5	7	6.55	6.95
PH	10-Aug-2004				
PH	10-Sep-2004				
PH	10-Oct-2004	6.5	8	6.65	7.85
PH	10-Nov-2004	7	8	7.10	7.90
PH	10-Dec-2004	7	8	7.10	7.90
PH	10-Jan-2005	8	8	8.00	8.00
PH	10-Feb-2005	7.5	8	7.55	7.95
PH	10-Mar-2005	7.5	8	7.55	7.95
PH	10-Apr-2005	7	8	7.10	7.90
PH	10-May-2005	7.5	8	7.55	7.95
PH	10-Jun-2005	7.5	8	7.55	7.95
PH	10-Jul-2005	7.5	8	7.55	7.95
PH	10-Aug-2005	7.5	7.5	7.50	7.50
PH	10-Sep-2005				
PH	10-Oct-2005	7.5	8	7.55	7.95
PH	10-Nov-2005	7.5	8	7.55	7.95
PH	10-Dec-2005	7.5	8	7.55	7.95
PH	10-Jan-2006	7.5	8	7.55	7.95
PH	10-Feb-2006	7	8	7.10	7.90
PH	10-Mar-2006	7	8	7.10	7.90
PH	10-Apr-2006	7	8	7.10	7.90
PH	10-May-2006	7	8	7.10	7.90
PH	10-Jun-2006	7	8	7.10	7.90
PH	10-Jul-2006	7.5	8	7.55	7.95
PH	10-Aug-2006				
PH	10-Sep-2006				
PH	10-Oct-2006	7.1	7.5	7.14	7.46
PH	10-Nov-2006	7.2	8	7.28	7.92
PH	10-Dec-2006	7.1	8	7.19	7.91
PH	10-Jan-2007	7	7.9	7.09	7.81
PH	10-Feb-2007	7.3	8.1	7.38	8.02
PH	10-Mar-2007	7.5	8.7	7.62	8.58
PH	10-Apr-2007	7	8.3	7.13	8.17
PH	10-May-2007	7	8	7.10	7.90
PH	10-Jun-2007	7	8	7.10	7.90
PH	10-Jul-2007	7	7.8	7.08	7.72
PH	10-Aug-2007				
PH	10-Sep-2007				
PH	10-Oct-2007	7	8.1	7.11	7.99
PH	10-Nov-2007	7	8	7.10	7.90
PH	10-Dec-2007	7.2	8.4	7.32	8.28
PH	10-Jan-2008	6.9	8.1	7.02	7.98
PH	10-Feb-2008	7.1	8.2	7.21	8.09
PH	10-Mar-2008	7.1	8.2	7.21	8.09
PH	10-Apr-2008	7.1	8.2	7.21	8.09
PH	10-May-2008	7.2	8	7.28	7.92
			Average=	7.20	7.89

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Bedford Co. - Otter River E.S. WWTP Permit No.: VA0020851

Receiving Stream: UT to Big Otter River

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	0	mg/L
90% Temperature (Annual) =	0	deg C
90% Temperature (Wet season) =	0	deg C
90% Maximum pH =	0	SU
10% Maximum pH =	0	SU
Tier Designation (1 or 2) =	2	
Public Water Supply (PWS) Y/N? =	Y	
Trout Present Y/N? =	N	
Early Life Stages Present Y/N? =	Y	

Stream Flows

1Q10 (Annual) =	0	MGD
7Q10 (Annual) =	0	MGD
30Q10 (Annual) =	0	MGD
1Q10 (Wet season) =	0	MGD
30Q10 (Wet season)	0	MGD
30Q5 =	0	MGD
Harmonic Mean =	0	MGD
Annual Average =	0	MGD

Mixing Information

Annual - 1Q10 Mix =	100	%
- 7Q10 Mix =	100	%
- 30Q10 Mix =	100	%
Wet Season - 1Q10 Mix =	100	%
- 30Q10 Mix =	100	%

Effluent Information

Mean Hardness (as CaCO3) =	100	mg/L
90% Temp (Annual) =	20	deg C
90% Temp (Wet season) =	12	deg C
90% Maximum pH =	7.9	SU
10% Maximum pH =	7.25	SU
Discharge Flow =	0.0045	MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Acenapthene	0	--	--	1.2E+03	2.7E+03	--	--	1.2E+03	2.7E+03	--	--	1.2E+02	2.7E+02	--	--	1.2E+02	2.7E+02	**--**	**--**	**1.2E+02**	**2.7E+02**
Acrolein	0	--	--	3.2E+02	7.8E+02	--	--	3.2E+02	7.8E+02	--	--	3.2E+01	7.8E+01	--	--	3.2E+01	7.8E+01	**--**	**--**	**3.2E+01**	**7.8E+01**
Acrylonitrile [C]	0	--	--	5.9E-01	6.6E+00	--	--	5.9E-01	6.6E+00	--	--	5.9E-02	6.6E-01	--	--	5.9E-02	6.6E-01	**--**	**--**	**5.9E-02**	**6.6E-01**
Aldrin [C]	0	3.0E+00	--	1.3E-03	1.4E-03	3.0E+00	--	1.3E-03	1.4E-03	7.5E-01	--	1.3E-04	1.4E-04	7.5E-01	--	1.3E-04	1.4E-04	**7.5E-01**	**--**	**1.3E-04**	**1.4E-04**
Ammonia-N (mg/l) (Yearly)	0	1.01E+01	1.96E+00	--	--	1.0E+01	2.0E+00	--	--	2.53E+00	4.91E-01	--	--	2.5E+00	4.9E-01	--	--	**2.5E+00**	**4.9E-01**	**--**	**--**
Ammonia-N (mg/l) (High Flow)	0	1.01E+01	2.80E+00	--	--	1.0E+01	2.8E+00	--	--	2.53E+00	6.99E-01	--	--	2.5E+00	7.0E-01	--	--	**2.5E+00**	**7.0E-01**	**--**	**--**
Anthracene	0	--	--	9.6E+03	1.1E+05	--	--	9.6E+03	1.1E+05	--	--	9.6E+02	1.1E+04	--	--	9.6E+02	1.1E+04	**--**	**--**	**9.6E+02**	**1.1E+04**
Antimony	0	--	--	1.4E+01	4.3E+03	--	--	1.4E+01	4.3E+03	--	--	1.4E+00	4.3E+02	--	--	1.4E+00	4.3E+02	**--**	**--**	**1.4E+00**	**4.3E+02**
Arsenic	0	3.4E+02	1.5E+02	1.0E+01	--	3.4E+02	1.5E+02	1.0E+01	--	8.5E+01	3.8E+01	1.0E+00	--	8.5E+01	3.8E+01	1.0E+00	--	**8.5E+01**	**3.8E+01**	**1.0E+00**	**--**
Barium	0	--	--	2.0E+03	--	--	--	2.0E+03	--	--	--	2.0E+02	--	--	--	2.0E+02	--	**--**	**--**	**2.0E+02**	**--**
Benzene [C]	0	--	--	1.2E+01	7.1E+02	--	--	1.2E+01	7.1E+02	--	--	1.2E+00	7.1E+01	--	--	1.2E+00	7.1E+01	**--**	**--**	**1.2E+00**	**7.1E+01**
Benzidine [C]	0	--	--	1.2E-03	5.4E-03	--	--	1.2E-03	5.4E-03	--	--	1.2E-04	5.4E-04	--	--	1.2E-04	5.4E-04	**--**	**--**	**1.2E-04**	**5.4E-04**
Benzo (a) anthracene [C]	0	--	--	4.4E-02	4.9E-01	--	--	4.4E-02	4.9E-01	--	--	4.4E-03	4.9E-02	--	--	4.4E-03	4.9E-02	**--**	**--**	**4.4E-03**	**4.9E-02**
Benzo (b) fluoranthene [C]	0	--	--	4.4E-02	4.9E-01	--	--	4.4E-02	4.9E-01	--	--	4.4E-03	4.9E-02	--	--	4.4E-03	4.9E-02	**--**	**--**	**4.4E-03**	**4.9E-02**
Benzo (k) fluoranthene [C]	0	--	--	4.4E-02	4.9E-01	--	--	4.4E-02	4.9E-01	--	--	4.4E-03	4.9E-02	--	--	4.4E-03	4.9E-02	**--**	**--**	**4.4E-03**	**4.9E-02**
Benzo (a) pyrene [C]	0	--	--	4.4E-02	4.9E-01	--	--	4.4E-02	4.9E-01	--	--	4.4E-03	4.9E-02	--	--	4.4E-03	4.9E-02	**--**	**--**	**4.4E-03**	**4.9E-02**
Bis2-Chloroethyl Ether	0	--	--	3.1E-01	1.4E+01	--	--	3.1E-01	1.4E+01	--	--	3.1E-02	1.4E+00	--	--	3.1E-02	1.4E+00	**--**	**--**	**3.1E-02**	**1.4E+00**
Bis2-Chloroisopropyl Ether	0	--	--	1.4E+03	1.7E+05	--	--	1.4E+03	1.7E+05	--	--	1.4E+02	1.7E+04	--	--	1.4E+02	1.7E+04	**--**	**--**	**1.4E+02**	**1.7E+04**
Bromoform [C]	0	--	--	4.4E+01	3.6E+03	--	--	4.4E+01	3.6E+03	--	--	4.4E+00	3.6E+02	--	--	4.4E+00	3.6E+02	**--**	**--**	**4.4E+00**	**3.6E+02**
Butylbenzylphthalate	0	--	--	3.0E+03	5.2E+03	--	--	3.0E+03	5.2E+03	--	--	3.0E+02	5.2E+02	--	--	3.0E+02	5.2E+02	**--**	**--**	**3.0E+02**	**5.2E+02**
Cadmium	0	3.9E+00	1.1E+00	5.0E+00	--	3.9E+00	1.1E+00	5.0E+00	--	9.8E-01	2.8E-01	5.0E-01	--	9.8E-01	2.8E-01	5.0E-01	--	**9.8E-01**	**2.8E-01**	**5.0E-01**	**--**
Carbon Tetrachloride [C]	0	--	--	2.5E+00	4.4E+01	--	--	2.5E+00	4.4E+01	--	--	2.5E-01	4.4E+00	--	--	2.5E-01	4.4E+00	**--**	**--**	**2.5E-01**	**4.4E+00**
Chlordane [C]	0	2.4E+00	4.3E-03	2.1E-02	2.2E-02	2.4E+00	4.3E-03	2.1E-02	2.2E-02	6.0E-01	1.1E-03	2.1E-03	2.2E-03	6.0E-01	1.1E-03	2.1E-03	2.2E-03	**6.0E-01**	**1.1E-03**	**2.1E-03**	**2.2E-03**
Chloride	0	8.6E+05	2.3E+05	2.5E+05	--	8.6E+05	2.3E+05	2.5E+05	--	2.2E+05	5.8E+04	2.5E+04	--	2.2E+05	5.8E+04	2.5E+04	--	**2.2E+05**	**5.8E+04**	**2.5E+04**	**--**
TRC	0	1.9E+01	1.1E+01	--	--	1.9E+01	1.1E+01	--	--	4.8E+00	2.8E+00	--	--	4.8E+00	2.8E+00	--	--	**4.8E+00**	**2.8E+00**	**--**	**--**
Chlorobenzene	0	--	--	6.8E+02	2.1E+04	--	--	6.8E+02	2.1E+04	--	--	6.8E+01	2.1E+03	--	--	6.8E+01	2.1E+03	**--**	**--**	**6.8E+01**	**2.1E+03**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Chlorodibromomethane [C]	0	--	--	4.1E+00	3.4E+02	--	--	4.1E+00	3.4E+02	--	--	4.1E-01	3.4E+01	--	--	4.1E-01	3.4E+01	--	--	**4.1E-01**	**3.4E+01**
Chloroform [C]	0	--	--	3.5E+02	2.9E+04	--	--	3.5E+02	2.9E+04	--	--	3.5E+01	2.9E+03	--	--	3.5E+01	2.9E+03	--	--	**3.5E+01**	**2.9E+03**
2-Chloronaphthalene	0	--	--	1.7E+03	4.3E+03	--	--	1.7E+03	4.3E+03	--	--	1.7E+02	4.3E+02	--	--	1.7E+02	4.3E+02	--	--	**1.7E+02**	**4.3E+02**
2-Chlorophenol	0	--	--	1.2E+02	4.0E+02	--	--	1.2E+02	4.0E+02	--	--	1.2E+01	4.0E+01	--	--	1.2E+01	4.0E+01	--	--	**1.2E+01**	**4.0E+01**
Chlorpyrifos	0	8.3E-02	4.1E-02	--	--	8.3E-02	4.1E-02	--	--	2.1E-02	1.0E-02	--	--	2.1E-02	1.0E-02	--	--	**2.1E-02**	**1.0E-02**	--	--
Chromium III	0	5.7E+02	7.4E+01	--	--	5.7E+02	7.4E+01	--	--	1.4E+02	1.9E+01	--	--	1.4E+02	1.9E+01	--	--	**1.4E+02**	**1.9E+01**	--	--
Chromium VI	0	1.6E+01	1.1E+01	--	--	1.6E+01	1.1E+01	--	--	4.0E+00	2.8E+00	--	--	4.0E+00	2.8E+00	--	--	**4.0E+00**	**2.8E+00**	--	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	1.0E+02	--	--	--	1.0E+01	--	--	--	1.0E+01	--	--	--	**1.0E+01**	--
Chrysene [C]	0	--	--	4.4E-02	4.9E-01	--	--	4.4E-02	4.9E-01	--	--	4.4E-03	4.9E-02	--	--	4.4E-03	4.9E-02	--	--	**4.4E-03**	**4.9E-02**
Copper	0	1.3E+01	9.0E+00	1.3E+03	--	1.3E+01	9.0E+00	1.3E+03	--	3.4E+00	2.2E+00	1.3E+02	--	3.4E+00	2.2E+00	1.3E+02	--	**3.4E+00**	**2.2E+00**	**1.3E+02**	--
Cyanide	0	2.2E+01	5.2E+00	7.0E+02	2.2E+05	2.2E+01	5.2E+00	7.0E+02	2.2E+05	5.5E+00	1.3E+00	7.0E+01	2.2E+04	5.5E+00	1.3E+00	7.0E+01	2.2E+04	**5.5E+00**	**1.3E+00**	**7.0E+01**	**2.2E+04**
DDD [C]	0	--	--	8.3E-03	8.4E-03	--	--	8.3E-03	8.4E-03	--	--	8.3E-04	8.4E-04	--	--	8.3E-04	8.4E-04	--	--	**8.3E-04**	**8.4E-04**
DDE [C]	0	--	--	5.9E-03	5.9E-03	--	--	5.9E-03	5.9E-03	--	--	5.9E-04	5.9E-04	--	--	5.9E-04	5.9E-04	--	--	**5.9E-04**	**5.9E-04**
DDT [C]	0	1.1E+00	1.0E-03	5.9E-03	5.9E-03	1.1E+00	1.0E-03	5.9E-03	5.9E-03	2.8E-01	2.5E-04	5.9E-04	5.9E-04	2.8E-01	2.5E-04	5.9E-04	5.9E-04	**2.8E-01**	**2.5E-04**	**5.9E-04**	**5.9E-04**
Demeton	0	--	1.0E-01	--	--	--	1.0E-01	--	--	--	2.5E-02	--	--	--	2.5E-02	--	--	--	**2.5E-02**	--	--
Dibenz(a,h)anthracene [C]	0	--	--	4.4E-02	4.9E-01	--	--	4.4E-02	4.9E-01	--	--	4.4E-03	4.9E-02	--	--	4.4E-03	4.9E-02	--	--	**4.4E-03**	**4.9E-02**
Dibutyl phthalate	0	--	--	2.7E+03	1.2E+04	--	--	2.7E+03	1.2E+04	--	--	2.7E+02	1.2E+03	--	--	2.7E+02	1.2E+03	--	--	**2.7E+02**	**1.2E+03**
Dichloromethane (Methylene Chloride) [C]	0	--	--	4.7E+01	1.6E+04	--	--	4.7E+01	1.6E+04	--	--	4.7E+00	1.6E+03	--	--	4.7E+00	1.6E+03	--	--	**4.7E+00**	**1.6E+03**
1,2-Dichlorobenzene	0	--	--	2.7E+03	1.7E+04	--	--	2.7E+03	1.7E+04	--	--	2.7E+02	1.7E+03	--	--	2.7E+02	1.7E+03	--	--	**2.7E+02**	**1.7E+03**
1,3-Dichlorobenzene	0	--	--	4.0E+02	2.6E+03	--	--	4.0E+02	2.6E+03	--	--	4.0E+01	2.6E+02	--	--	4.0E+01	2.6E+02	--	--	**4.0E+01**	**2.6E+02**
1,4-Dichlorobenzene	0	--	--	4.0E+02	2.6E+03	--	--	4.0E+02	2.6E+03	--	--	4.0E+01	2.6E+02	--	--	4.0E+01	2.6E+02	--	--	**4.0E+01**	**2.6E+02**
3,3-Dichlorobenzidine [C]	0	--	--	4.0E-01	7.7E-01	--	--	4.0E-01	7.7E-01	--	--	4.0E-02	7.7E-02	--	--	4.0E-02	7.7E-02	--	--	**4.0E-02**	**7.7E-02**
Dichlorobromomethane [C]	0	--	--	5.6E+00	4.6E+02	--	--	5.6E+00	4.6E+02	--	--	5.6E-01	4.6E+01	--	--	5.6E-01	4.6E+01	--	--	**5.6E-01**	**4.6E+01**
1,2-Dichloroethane [C]	0	--	--	3.8E+00	9.9E+02	--	--	3.8E+00	9.9E+02	--	--	3.8E-01	9.9E+01	--	--	3.8E-01	9.9E+01	--	--	**3.8E-01**	**9.9E+01**
1,1-Dichloroethylene	0	--	--	3.1E+02	1.7E+04	--	--	3.1E+02	1.7E+04	--	--	3.1E+01	1.7E+03	--	--	3.1E+01	1.7E+03	--	--	**3.1E+01**	**1.7E+03**
1,2-trans-dichloroethylene	0	--	--	7.0E+02	1.4E+05	--	--	7.0E+02	1.4E+05	--	--	7.0E+01	1.4E+04	--	--	7.0E+01	1.4E+04	--	--	**7.0E+01**	**1.4E+04**
2,4-Dichlorophenol	0	--	--	9.3E+01	7.9E+02	--	--	9.3E+01	7.9E+02	--	--	9.3E+00	7.9E+01	--	--	9.3E+00	7.9E+01	--	--	**9.3E+00**	**7.9E+01**
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	1.0E+02	--	--	--	1.0E+02	--	--	--	1.0E+01	--	--	--	1.0E+01	--	--	--	**1.0E+01**	--
1,2-Dichloropropane [C]	0	--	--	5.2E+00	3.9E+02	--	--	5.2E+00	3.9E+02	--	--	5.2E-01	3.9E+01	--	--	5.2E-01	3.9E+01	--	--	**5.2E-01**	**3.9E+01**
1,3-Dichloropropene	0	--	--	1.0E+01	1.7E+03	--	--	1.0E+01	1.7E+03	--	--	1.0E+00	1.7E+02	--	--	1.0E+00	1.7E+02	--	--	**1.0E+00**	**1.7E+02**
Dieldrin [C]	0	2.4E-01	5.6E-02	1.4E-03	1.4E-03	2.4E-01	5.6E-02	1.4E-03	1.4E-03	6.0E-02	1.4E-02	1.4E-04	1.4E-04	6.0E-02	1.4E-02	1.4E-04	1.4E-04	**6.0E-02**	**1.4E-02**	**1.4E-04**	**1.4E-04**
Diethyl Phthalate	0	--	--	2.3E+04	1.2E+05	--	--	2.3E+04	1.2E+05	--	--	2.3E+03	1.2E+04	--	--	2.3E+03	1.2E+04	--	--	**2.3E+03**	**1.2E+04**
Di-2-Ethylhexyl Phthalate [C]	0	--	--	1.8E+01	5.9E+01	--	--	1.8E+01	5.9E+01	--	--	1.8E+00	5.9E+00	--	--	1.8E+00	5.9E+00	--	--	**1.8E+00**	**5.9E+00**
2,4-Dimethylphenol	0	--	--	5.4E+02	2.3E+03	--	--	5.4E+02	2.3E+03	--	--	5.4E+01	2.3E+02	--	--	5.4E+01	2.3E+02	--	--	**5.4E+01**	**2.3E+02**
Dimethyl Phthalate	0	--	--	3.1E+05	2.9E+06	--	--	3.1E+05	2.9E+06	--	--	3.1E+04	2.9E+05	--	--	3.1E+04	2.9E+05	--	--	**3.1E+04**	**2.9E+05**
Di-n-Butyl Phthalate	0	--	--	2.7E+03	1.2E+04	--	--	2.7E+03	1.2E+04	--	--	2.7E+02	1.2E+03	--	--	2.7E+02	1.2E+03	--	--	**2.7E+02**	**1.2E+03**
2,4 Dinitrophenol	0	--	--	7.0E+01	1.4E+04	--	--	7.0E+01	1.4E+04	--	--	7.0E+00	1.4E+03	--	--	7.0E+00	1.4E+03	--	--	**7.0E+00**	**1.4E+03**
2-Methyl-4,6-Dinitrophenol	0	--	--	1.3E+01	7.65E+02	--	--	1.3E+01	7.7E+02	--	--	1.3E+00	7.7E+01	--	--	1.3E+00	7.7E+01	--	--	**1.3E+00**	**7.7E+01**
2,4-Dinitrotoluene [C]	0	--	--	1.1E+00	9.1E+01	--	--	1.1E+00	9.1E+01	--	--	1.1E-01	9.1E+00	--	--	1.1E-01	9.1E+00	--	--	**1.1E-01**	**9.1E+00**
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	1.2E-06	1.2E-06	--	--	1.2E-06	1.2E-06	--	--	1.2E-07	1.2E-07	--	--	1.2E-07	1.2E-07	--	--	**1.2E-07**	**1.2E-07**
1,2-Diphenylhydrazine [C]	0	--	--	4.0E-01	5.4E+00	--	--	4.0E-01	5.4E+00	--	--	4.0E-02	5.4E-01	--	--	4.0E-02	5.4E-01	--	--	**4.0E-02**	**5.4E-01**
Alpha-Endosulfan	0	2.2E-01	5.6E-02	1.1E+02	2.4E+02	2.2E-01	5.6E-02	1.1E+02	2.4E+02	5.5E-02	1.4E-02	1.1E+01	2.4E+01	5.5E-02	1.4E-02	1.1E+01	2.4E+01	**5.5E-02**	**1.4E-02**	**1.1E+01**	**2.4E+01**
Beta-Endosulfan	0	2.2E-01	5.6E-02	1.1E+02	2.4E+02	2.2E-01	5.6E-02	1.1E+02	2.4E+02	5.5E-02	1.4E-02	1.1E+01	2.4E+01	5.5E-02	1.4E-02	1.1E+01	2.4E+01	**5.5E-02**	**1.4E-02**	**1.1E+01**	**2.4E+01**
Endosulfan Sulfate	0	--	--	1.1E+02	2.4E+02	--	--	1.1E+02	2.4E+02	--	--	1.1E+01	2.4E+01	--	--	1.1E+01	2.4E+01	--	--	**1.1E+01**	**2.4E+01**
Endrin	0	8.6E-02	3.6E-02	7.6E-01	8.1E-01	8.6E-02	3.6E-02	7.6E-01	8.1E-01	2.2E-02	9.0E-03	7.6E-02	8.1E-02	2.2E-02	9.0E-03	7.6E-02	8.1E-02	**2.2E-02**	**9.0E-03**	**7.6E-02**	**8.1E-02**
Endrin Aldehyde	0	--	--	7.6E-01	8.1E-01	--	--	7.6E-01	8.1E-01	--	--	7.6E-02	8.1E-02	--	--	7.6E-02	8.1E-02	--	--	**7.6E-02**	**8.1E-02**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	3.1E+03	2.9E+04	--	--	3.1E+03	2.9E+04	--	--	3.1E+02	2.9E+03	--	--	3.1E+02	2.9E+03	--	--	**3.1E+02**	**2.9E+03**
Fluoranthene	0	--	--	3.0E+02	3.7E+02	--	--	3.0E+02	3.7E+02	--	--	3.0E+01	3.7E+01	--	--	3.0E+01	3.7E+01	--	--	**3.0E+01**	**3.7E+01**
Fluorene	0	--	--	1.3E+03	1.4E+04	--	--	1.3E+03	1.4E+04	--	--	1.3E+02	1.4E+03	--	--	1.3E+02	1.4E+03	--	--	**1.3E+02**	**1.4E+03**
Foaming Agents	0	--	--	5.0E+02	--	--	--	5.0E+02	--	--	--	5.0E+01	--	--	--	5.0E+01	--	--	--	**5.0E+01**	**--**
Guthion	0	--	1.0E-02	--	--	--	1.0E-02	--	--	--	2.5E-03	--	--	--	2.5E-03	--	--	--	**2.5E-03**	**--**	**--**
Heptachlor [C]	0	5.2E-01	3.8E-03	2.1E-03	2.1E-03	5.2E-01	3.8E-03	2.1E-03	2.1E-03	1.3E-01	9.5E-04	2.1E-04	2.1E-04	1.3E-01	9.5E-04	2.1E-04	2.1E-04	**1.3E-01**	**9.5E-04**	**2.1E-04**	**2.1E-04**
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	1.0E-03	1.1E-03	5.2E-01	3.8E-03	1.0E-03	1.1E-03	1.3E-01	9.5E-04	1.0E-04	1.1E-04	1.3E-01	9.5E-04	1.0E-04	1.1E-04	**1.3E-01**	**9.5E-04**	**1.0E-04**	**1.1E-04**
Hexachlorobenzene [C]	0	--	--	7.5E-03	7.7E-03	--	--	7.5E-03	7.7E-03	--	--	7.5E-04	7.7E-04	--	--	7.5E-04	7.7E-04	--	--	**7.5E-04**	**7.7E-04**
Hexachlorobutadiene [C]	0	--	--	4.4E+00	5.0E+02	--	--	4.4E+00	5.0E+02	--	--	4.4E-01	5.0E+01	--	--	4.4E-01	5.0E+01	--	--	**4.4E-01**	**5.0E+01**
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	3.9E-02	1.3E-01	--	--	3.9E-02	1.3E-01	--	--	3.9E-03	1.3E-02	--	--	3.9E-03	1.3E-02	--	--	**3.9E-03**	**1.3E-02**
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	1.4E-01	4.6E-01	--	--	1.4E-01	4.6E-01	--	--	1.4E-02	4.6E-02	--	--	1.4E-02	4.6E-02	--	--	**1.4E-02**	**4.6E-02**
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	--	1.9E-01	6.3E-01	9.5E-01	--	1.9E-01	6.3E-01	2.4E-01	--	1.9E-02	6.3E-02	2.4E-01	--	1.9E-02	6.3E-02	**2.4E-01**	**--**	**1.9E-02**	**6.3E-02**
Hexachlorocyclopentadiene	0	--	--	2.4E+02	1.7E+04	--	--	2.4E+02	1.7E+04	--	--	2.4E+01	1.7E+03	--	--	2.4E+01	1.7E+03	--	--	**2.4E+01**	**1.7E+03**
Hexachloroethane [C]	0	--	--	1.9E+01	8.9E+01	--	--	1.9E+01	8.9E+01	--	--	1.9E+00	8.9E+00	--	--	1.9E+00	8.9E+00	--	--	**1.9E+00**	**8.9E+00**
Hydrogen Sulfide	0	--	2.0E+00	--	--	--	2.0E+00	--	--	--	5.0E-01	--	--	--	5.0E-01	--	--	--	**5.0E-01**	**--**	**--**
Indeno (1,2,3-cd) pyrene [C]	0	--	--	4.4E-02	4.9E-01	--	--	4.4E-02	4.9E-01	--	--	4.4E-03	4.9E-02	--	--	4.4E-03	4.9E-02	--	--	**4.4E-03**	**4.9E-02**
Iron	0	--	--	3.0E+02	--	--	--	3.0E+02	--	--	--	3.0E+01	--	--	--	3.0E+01	--	--	--	**3.0E+01**	**--**
Isophorone [C]	0	--	--	3.6E+02	2.6E+04	--	--	3.6E+02	2.6E+04	--	--	3.6E+01	2.6E+03	--	--	3.6E+01	2.6E+03	--	--	**3.6E+01**	**2.6E+03**
Kepone	0	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--	--	**0.0E+00**	**--**	**--**
Lead	0	1.2E+02	1.4E+01	1.5E+01	--	1.2E+02	1.4E+01	1.5E+01	--	3.0E+01	3.4E+00	1.5E+00	--	3.0E+01	3.4E+00	1.5E+00	--	**3.0E+01**	**3.4E+00**	**1.5E+00**	**--**
Malathion	0	--	1.0E-01	--	--	--	1.0E-01	--	--	--	2.5E-02	--	--	--	2.5E-02	--	--	--	**2.5E-02**	**--**	**--**
Manganese	0	--	--	5.0E+01	--	--	--	5.0E+01	--	--	--	5.0E+00	--	--	--	5.0E+00	--	--	--	**5.0E+00**	**--**
Mercury	0	1.4E+00	7.7E-01	5.0E-02	5.1E-02	1.4E+00	7.7E-01	5.0E-02	5.1E-02	3.5E-01	1.9E-01	5.0E-03	5.1E-03	3.5E-01	1.9E-01	5.0E-03	5.1E-03	**3.5E-01**	**1.9E-01**	**5.0E-03**	**5.1E-03**
Methyl Bromide	0	--	--	4.8E+01	4.0E+03	--	--	4.8E+01	4.0E+03	--	--	4.8E+00	4.0E+02	--	--	4.8E+00	4.0E+02	--	--	**4.8E+00**	**4.0E+02**
Methoxychlor	0	--	3.0E-02	1.0E+02	--	--	3.0E-02	1.0E+02	--	--	7.5E-03	1.0E+01	--	--	7.5E-03	1.0E+01	--	--	**7.5E-03**	**1.0E+01**	**--**
Mirex	0	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--	--	**0.0E+00**	**--**	**--**
Monochlorobenzene	0	--	--	6.8E+02	2.1E+04	--	--	6.8E+02	2.1E+04	--	--	6.8E+01	2.1E+03	--	--	6.8E+01	2.1E+03	--	--	**6.8E+01**	**2.1E+03**
Nickel	0	1.8E+02	2.0E+01	6.1E+02	4.6E+03	1.8E+02	2.0E+01	6.1E+02	4.6E+03	4.6E+01	5.1E+00	6.1E+01	4.6E+02	4.6E+01	5.1E+00	6.1E+01	4.6E+02	**4.6E+01**	**5.1E+00**	**6.1E+01**	**4.6E+02**
Nitrate (as N)	0	--	--	1.0E+04	--	--	--	1.0E+04	--	--	--	1.0E+03	--	--	--	1.0E+03	--	--	--	**1.0E+03**	**--**
Nitrobenzene	0	--	--	1.7E+01	1.9E+03	--	--	1.7E+01	1.9E+03	--	--	1.7E+00	1.9E+02	--	--	1.7E+00	1.9E+02	--	--	**1.7E+00**	**1.9E+02**
N-Nitrosodimethylamine [C]	0	--	--	6.9E-03	8.1E+01	--	--	6.9E-03	8.1E+01	--	--	6.9E-04	8.1E+00	--	--	6.9E-04	8.1E+00	--	--	**6.9E-04**	**8.1E+00**
N-Nitrosodiphenylamine [C]	0	--	--	5.0E+01	1.6E+02	--	--	5.0E+01	1.6E+02	--	--	5.0E+00	1.6E+01	--	--	5.0E+00	1.6E+01	--	--	**5.0E+00**	**1.6E+01**
N-Nitrosodi-n-propylamine [C]	0	--	--	5.0E-02	1.4E+01	--	--	5.0E-02	1.4E+01	--	--	5.0E-03	1.4E+00	--	--	5.0E-03	1.4E+00	--	--	**5.0E-03**	**1.4E+00**
Parathion	0	6.5E-02	1.3E-02	--	--	6.5E-02	1.3E-02	--	--	1.6E-02	3.3E-03	--	--	1.6E-02	3.3E-03	--	--	**1.6E-02**	**3.3E-03**	**--**	**--**
PCB-1016	0	--	1.4E-02	--	--	--	1.4E-02	--	--	--	3.5E-03	--	--	--	3.5E-03	--	--	--	**3.5E-03**	**--**	**--**
PCB-1221	0	--	1.4E-02	--	--	--	1.4E-02	--	--	--	3.5E-03	--	--	--	3.5E-03	--	--	--	**3.5E-03**	**--**	**--**
PCB-1232	0	--	1.4E-02	--	--	--	1.4E-02	--	--	--	3.5E-03	--	--	--	3.5E-03	--	--	--	**3.5E-03**	**--**	**--**
PCB-1242	0	--	1.4E-02	--	--	--	1.4E-02	--	--	--	3.5E-03	--	--	--	3.5E-03	--	--	--	**3.5E-03**	**--**	**--**
PCB-1248	0	--	1.4E-02	--	--	--	1.4E-02	--	--	--	3.5E-03	--	--	--	3.5E-03	--	--	--	**3.5E-03**	**--**	**--**
PCB-1254	0	--	1.4E-02	--	--	--	1.4E-02	--	--	--	3.5E-03	--	--	--	3.5E-03	--	--	--	**3.5E-03**	**--**	**--**
PCB-1260	0	--	1.4E-02	--	--	--	1.4E-02	--	--	--	3.5E-03	--	--	--	3.5E-03	--	--	--	**3.5E-03**	**--**	**--**
PCB Total [C]	0	--	--	1.7E-03	1.7E-03	--	--	1.7E-03	1.7E-03	--	--	1.7E-04	1.7E-04	--	--	1.7E-04	1.7E-04	--	--	**1.7E-04**	**1.7E-04**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Pentachlorophenol [C]	0	1.1E+01	8.6E+00	2.8E+00	8.2E+01	1.1E+01	8.6E+00	2.8E+00	8.2E+01	2.8E+00	2.2E+00	2.8E-01	8.2E+00	2.8E+00	2.2E+00	2.8E-01	8.2E+00	**2.8E+00**	**2.2E+00**	**2.8E-01**	**8.2E+00**
Phenol	0	--	--	2.1E+04	4.6E+06	--	--	2.1E+04	4.6E+06	--	--	2.1E+03	4.6E+05	--	--	2.1E+03	4.6E+05	**--**	**--**	**2.1E+03**	**4.6E+05**
Pyrene	0	--	--	9.6E+02	1.1E+04	--	--	9.6E+02	1.1E+04	--	--	9.6E+01	1.1E+03	--	--	9.6E+01	1.1E+03	**--**	**--**	**9.6E+01**	**1.1E+03**
Radionuclides (pCi/l except Beta/Photon)	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**--**	**--**	**--**	**--**
Gross Alpha Activity	0	--	--	1.5E+01	1.5E+01	--	--	1.5E+01	1.5E+01	--	--	1.5E+00	1.5E+00	--	--	1.5E+00	1.5E+00	**--**	**--**	**1.5E+00**	**1.5E+00**
Beta and Photon Activity (mrem/yr)	0	--	--	4.0E+00	4.0E+00	--	--	4.0E+00	4.0E+00	--	--	4.0E-01	4.0E-01	--	--	4.0E-01	4.0E-01	**--**	**--**	**4.0E-01**	**4.0E-01**
Strontium-90	0	--	--	8.0E+00	8.0E+00	--	--	8.0E+00	8.0E+00	--	--	8.0E-01	8.0E-01	--	--	8.0E-01	8.0E-01	**--**	**--**	**8.0E-01**	**8.0E-01**
Tritium	0	--	--	2.0E+04	2.0E+04	--	--	2.0E+04	2.0E+04	--	--	2.0E+03	2.0E+03	--	--	2.0E+03	2.0E+03	**--**	**--**	**2.0E+03**	**2.0E+03**
Selenium	0	2.0E+01	5.0E+00	1.7E+02	1.1E+04	2.0E+01	5.0E+00	1.7E+02	1.1E+04	5.0E+00	1.3E+00	1.7E+01	1.1E+03	5.0E+00	1.3E+00	1.7E+01	1.1E+03	**5.0E+00**	**1.3E+00**	**1.7E+01**	**1.1E+03**
Silver	0	3.4E+00	--	--	--	3.4E+00	--	--	--	8.6E-01	--	--	--	8.6E-01	--	--	--	**8.6E-01**	**--**	**--**	**--**
Sulfate	0	--	--	2.5E+05	--	--	--	2.5E+05	--	--	--	2.5E+04	--	--	--	2.5E+04	--	**--**	**--**	**2.5E+04**	**--**
1,1,2,2-Tetrachloroethane [C]	0	--	--	1.7E+00	1.1E+02	--	--	1.7E+00	1.1E+02	--	--	1.7E-01	1.1E+01	--	--	1.7E-01	1.1E+01	**--**	**--**	**1.7E-01**	**1.1E+01**
Tetrachloroethylene [C]	0	--	--	8.0E+00	8.9E+01	--	--	8.0E+00	8.9E+01	--	--	8.0E-01	8.9E+00	--	--	8.0E-01	8.9E+00	**--**	**--**	**8.0E-01**	**8.9E+00**
Thallium	0	--	--	1.7E+00	6.3E+00	--	--	1.7E+00	6.3E+00	--	--	1.7E-01	6.3E-01	--	--	1.7E-01	6.3E-01	**--**	**--**	**1.7E-01**	**6.3E-01**
Toluene	0	--	--	6.8E+03	2.0E+05	--	--	6.8E+03	2.0E+05	--	--	6.8E+02	2.0E+04	--	--	6.8E+02	2.0E+04	**--**	**--**	**6.8E+02**	**2.0E+04**
Total dissolved solids	0	--	--	5.0E+05	--	--	--	5.0E+05	--	--	--	5.0E+04	--	--	--	5.0E+04	--	**--**	**--**	**5.0E+04**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	7.3E-03	7.5E-03	7.3E-01	2.0E-04	7.3E-03	7.5E-03	1.8E-01	5.0E-05	7.3E-04	7.5E-04	1.8E-01	5.0E-05	7.3E-04	7.5E-04	**1.8E-01**	**5.0E-05**	**7.3E-04**	**7.5E-04**
Tributyltin	0	4.6E-01	6.3E-02	--	--	4.6E-01	6.3E-02	--	--	1.2E-01	1.6E-02	--	--	1.2E-01	1.6E-02	--	--	**1.2E-01**	**1.6E-02**	**--**	**--**
1,2,4-Trichlorobenzene	0	--	--	2.6E+02	9.4E+02	--	--	2.6E+02	9.4E+02	--	--	2.6E+01	9.4E+01	--	--	2.6E+01	9.4E+01	**--**	**--**	**2.6E+01**	**9.4E+01**
1,1,2-Trichloroethane [C]	0	--	--	6.0E+00	4.2E+02	--	--	6.0E+00	4.2E+02	--	--	6.0E-01	4.2E+01	--	--	6.0E-01	4.2E+01	**--**	**--**	**6.0E-01**	**4.2E+01**
Trichloroethylene [C]	0	--	--	2.7E+01	8.1E+02	--	--	2.7E+01	8.1E+02	--	--	2.7E+00	8.1E+01	--	--	2.7E+00	8.1E+01	**--**	**--**	**2.7E+00**	**8.1E+01**
2,4,6-Trichlorophenol [C]	0	--	--	2.1E+01	6.5E+01	--	--	2.1E+01	6.5E+01	--	--	2.1E+00	6.5E+00	--	--	2.1E+00	6.5E+00	**--**	**--**	**2.1E+00**	**6.5E+00**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	5.0E+01	--	--	--	5.0E+01	--	--	--	5.0E+00	--	--	--	5.0E+00	--	**--**	**--**	**5.0E+00**	**--**
Vinyl Chloride [C]	0	--	--	2.3E-01	6.1E+01	--	--	2.3E-01	6.1E+01	--	--	2.3E-02	6.1E+00	--	--	2.3E-02	6.1E+00	**--**	**--**	**2.3E-02**	**6.1E+00**
Zinc	0	1.2E+02	1.2E+02	9.1E+03	6.9E+04	1.2E+02	1.2E+02	9.1E+03	6.9E+04	2.9E+01	3.0E+01	9.1E+02	6.9E+03	2.9E+01	3.0E+01	9.1E+02	6.9E+03	**2.9E+01**	**3.0E+01**	**9.1E+02**	**6.9E+03**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	1.4E+00
Arsenic	1.0E+00
Barium	2.0E+02
Cadmium	1.7E-01
Chromium III	1.1E+01
Chromium VI	1.6E+00
Copper	1.3E+00
Iron	3.0E+01
Lead	1.5E+00
Manganese	5.0E+00
Mercury	5.0E-03
Nickel	3.0E+00
Selenium	7.5E-01
Silver	3.4E-01
Zinc	1.2E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

5/16/2008 10:05:23 AM

Facility = Bedford Co Otter River E.S. WWTP - VA0020851
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 10
WLAc =
Q.L. = .2
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 10
Average Weekly limit = 10
Average Monthly LImit = 10

The data are:

9

5/16/2008 10:06:39 AM

Facility = Bedford Co Otter River E.S. - VA0020851
Chemical = TRC
Chronic averaging period = 4
WLAa = 19
WLAc =
Q.L. = 100
# samples/mo. = 30
# samples/wk. = 8

Summary of Statistics:

observations = 1
Expected Value = 20000
Variance = 1440000
C.V. = 0.6
97th percentile daily values = 48668.3
97th percentile 4 day average = 33275.8
97th percentile 30 day average= 24121.0
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 19
Average Weekly limit = 11.3335966321422
Average Monthly LImit = 9.4168021134859

The data are:

20000

THIS IS A WORK IN PROGRESS UPDATING FOR WQS CHANGES jkw 1/11/01
Calculation of Waste Load Allocations using OWRM guidance memo 00-2011
This spreadsheet uses the Fractional Complete Mix calculated by the 3-95 Mixing Model

WLA Analysis For: Otter River Elementary Schc **Date:** 03/17/03

Stream: UT to Big Otter River (Int.)

Mean Hardness =	30	mg/L (Default)
Stream NH3 =	0	mg/L
90% Temperature =	24.9	C
90% pH =	8.5	SU
Fractional 7Q10 =	0	MGD (100%)
Fractional 1Q10 =	0	MGD (100%)
Harmonic mean =	0	Carcinogen
30Q5 Flow =	0	Non-carcinogen
Annual Average =	0	Dioxin only
R(iver),L(ake) or S(torm):	R	R, L, S
Trout Present?	N	Y, N
Public Water Supply:	Y	Y, N

Effluent Information

Mean Hardness =	30	mg/L
Effluent NH3 =	0	mg/L
90% Temperature =	20	C
90% pH =	7.95	SU
Original Flow =	0.005	MGD

Hardness
acute: 30
chronic: 30
7Q10 Ratio: 1
1Q10 Ratio: 1
Harmonic ratio: 1
30Q5 ratio: 1
Annual Average ratio: 1

Mix Hardness
acute: 30
chronic: 30
* WLAa
Coefficient = 0.99
Acute IWC = 1
ıronic IWC = 1

Parameter and Form	Carcinogen?	Sort? (Y/N)	Aquatic Protection Freshwater Criteria Acute Criteria	Chronic Criteria	Human Health Criteria PWS Criteria	Other Waters Criteria	Acute WLA	Chronic WLA	PWS WLA	Other Waters WLA
Ammonia (mg/l as N)		y	6.098	1.390	None	None	6.10	1.39	NA	NA
Chlorine		y	19	11	None	None	19.00	11.00	NA	NA

3/17/2003 9:17:08 AM

Facility = Otter River Elementary School STP
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 6.1
WLAc = 1000
Q.L. = .2
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 6.1
Average Weekly limit = 6.1
Average Monthly LImit = 6.1

The data are:

9

Calculation of ANTIDEGRADATION Waste Load Allocations using OWRM guidance memo 93-015 amendment no. 1
This spreadsheet uses the Fractional Complete Mix calculated by the 3-95 Mixing Model

WLA Analysis For: Otter River Elementary School STP **ANTIDEGRADATION** **Date: 4/7/2003**

			Effluent Information					
Stream:	UT to Big Otter River (Perennial)							
Mean Hardness =	30	mg/L	Mean Hardness =	30	mg/L	Hardness:	30.00 acute	Mix Hardness=	30.00 acute
Stream NH3 =	0	mg/L	Effluent NH3 =	1.68	mg/L		30.00 chronic		30.00 chronic
90% Temperature =	24.9	C	90% Temperature =	20	C	7Q10 Ratio:	3.58	* WLAa	
90% pH =	8.5	SU	90% pH =	7.95	SU	1Q10 Ratio:	3.30	Coefficient =	0.60663
Fractional 7Q10 =	0.011628	100% of 7Q10 MGD	Original Flow =	0.0045	MGD			Acute IWC =	0.30332
Fractional 1Q10 =	0.010336	100% of 1Q10 MGD	Upgrade Flow =	0.0045	MGD	Harmonic ratio:	15.78622	Chronic IWC =	0.27902
Harmonic mean =	0.066538	Carcinogen				30Q5 ratio:	5.9		
30Q5 Flow =	0.021964	Non-carcinogen							
Annual Average =	1	Dioxin only							
R(iver),L(ake) or S(torm):	R	R, L, S							
Trout Present?	N	Y, N							
Public Water Supply:	Y	Y, N							

Parameter and Form	Receiving Stream Concentration	Expected Effluent Concentration	Carcinogen?	Sort? (Y/N)	Aquatic Protection Freshwater Criteria: Acute Quality Criteria	Acute Existing at 1Q10	Chronic Quality Criteria	Chronic Existing at 7Q10	Human Health: PWS Quality Criteria	HH Existing Quality	Acute Baseline	Chronic Baseline	Human Health Baseline	Acute A WLA	Chronic A WLA	Human Health A WLA
Ammonia (mg/l as N)				y	3.256	0.0000	0.719	0.0000	None	NA	0.814	0.18	NA	2.68	0.64	NA
Chlorine				y	19	0	11	0	None	NA	4.750	2.7500	NA	15.66	9.86	NA

VAW-L14R	VA0029254	Auth. - Ferrum Sewage Treatment Plant	001	Storey Creek	9.78	BOD_5	14.2
VAW-L14R	VA0085952	Rocky Mount Town Sewage Treatment Plant	001	Pigg River	52	BOD_5	133
VAW-L14R	VA0076015	Ronile Incorporated	001	Pigg River	57.24	BOD_5	14.8
VAW-L21R	VA0063738	Bedford County School Board - Staunton River High School	001	Shoulder Run, UT	0.95	BOD_5	1.8
VAW-L21R	VA0020869	Bedford County School Board - Thaxton Elementary School	001	Wolf Creek, UT	0.35	BOD_5	0.31
VAW-L22R	VA0023515	Blue Ridge Regional Jail Auth. - Moneta Adult Detention Facility STP	001	Mattox Creek, UT	3.76	BOD_5	1.66
VAW-L25R	VA0020851	Bedford County School Board - Otter River Elementary School	001	Big Otter River, UT	1.15	BOD_5	0.4
VAW-L26R	VA0022390	Bedford City - Sewage Treatment Plant	001	Little Otter River	14.36	BOD_5	52.8
VAW-L26R	VA0020818	Bedford County School Board -	001	Wells Creek, UT	2.22	BOD_5	0.4

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Bedford Co. - Otter River E.S. WWTP Permit No.: VA0020851

Receiving Stream: UT to Big Otter River

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	30 mg/L
90% Temperature (Annual) =	0 deg C
90% Temperature (Wet season) =	24.9 deg C
90% Maximum pH =	8.5 SU
10% Maximum pH =	7.5 SU
Tier Designation (1 or 2) =	2
Public Water Supply (PWS) Y/N? =	Y
Trout Present Y/N? =	N
Early Life Stages Present Y/N? =	Y

Stream Flows

1Q10 (Annual) =	0.008 MGD
7Q10 (Annual) =	0.0093 MGD
30Q10 (Annual) =	0.014 MGD
1Q10 (Wet season) =	0.036 MGD
30Q10 (Wet season)	0.056 MGD
30Q5 =	0.021 MGD
Harmonic Mean =	0.056 MGD
Annual Average =	0.091 MGD

Mixing Information

Annual - 1Q10 Mix =	100 %
- 7Q10 Mix =	100 %
- 30Q10 Mix =	100 %
Wet Season - 1Q10 Mix =	100 %
- 30Q10 Mix =	100 %

Effluent Information

Mean Hardness (as CaCO3) =	100 mg/L
90% Temp (Annual) =	20 deg C
90% Temp (Wet season) =	12 deg C
90% Maximum pH =	7.9 SU
10% Maximum pH =	7.25 SU
Discharge Flow =	0.0045 MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	1.2E+03	2.7E+03	--	--	6.8E+03	1.5E+04	--	--	1.2E+02	2.7E+02	--	--	6.8E+02	1.5E+03	--	--	**6.8E+02**	**1.5E+03**
Acrolein	0	--	--	3.2E+02	7.8E+02	--	--	1.8E+03	4.4E+03	--	--	3.2E+01	7.8E+01	--	--	1.8E+02	4.4E+02	--	--	**1.8E+02**	**4.4E+02**
Acrylonitrile [C]	0	--	--	5.9E-01	6.6E+00	--	--	7.9E+00	8.9E+01	--	--	5.9E-02	6.6E-01	--	--	7.9E-01	8.9E+00	--	--	**7.9E-01**	**8.9E+00**
Aldrin [C]	0	3.0E+00	--	1.3E-03	1.4E-03	8.3E+00	--	1.7E-02	1.9E-02	7.5E-01	--	1.3E-04	1.4E-04	2.1E+00	--	1.7E-03	1.9E-03	**2.1E+00**	--	**1.7E-03**	**1.9E-03**
Ammonia-N (mg/l) (Yearly)	0	5.91E+00	1.62E+00	--	--	1.6E+01	6.7E+00	--	--	1.48E+00	4.05E-01	--	--	4.1E+00	1.7E+00	--	--	**4.1E+00**	**1.7E+00**	--	--
Ammonia-N (mg/l) (High Flow)	0	4.07E+00	6.87E-01	--	--	3.7E+01	9.2E+00	--	--	1.02E+00	1.72E-01	--	--	9.2E+00	2.3E+00	--	--	**9.2E+00**	**2.3E+00**	--	--
Anthracene	0	--	--	9.6E+03	1.1E+05	--	--	5.4E+04	6.2E+05	--	--	9.6E+02	1.1E+04	--	--	5.4E+03	6.2E+04	--	--	**5.4E+03**	**6.2E+04**
Antimony	0	--	--	1.4E+01	4.3E+03	--	--	7.9E+01	2.4E+04	--	--	1.4E+00	4.3E+02	--	--	7.9E+00	2.4E+03	--	--	**7.9E+00**	**2.4E+03**
Arsenic	0	3.4E+02	1.5E+02	1.0E+01	--	9.4E+02	4.6E+02	5.7E+01	--	8.5E+01	3.8E+01	1.0E+00	--	2.4E+02	1.2E+02	5.7E+00	--	**2.4E+02**	**1.2E+02**	**5.7E+00**	--
Barium	0	--	--	2.0E+03	--	--	--	1.1E+04	--	--	--	2.0E+02	--	--	--	1.1E+03	--	--	--	**1.1E+03**	--
Benzene [C]	0	--	--	1.2E+01	7.1E+02	--	--	1.6E+02	9.5E+03	--	--	1.2E+00	7.1E+01	--	--	1.6E+01	9.5E+02	--	--	**1.6E+01**	**9.5E+02**
Benzidine [C]	0	--	--	1.2E-03	5.4E-03	--	--	1.6E-02	7.3E-02	--	--	1.2E-04	5.4E-04	--	--	1.6E-03	7.3E-03	--	--	**1.6E-03**	**7.3E-03**
Benzo (a) anthracene [C]	0	--	--	4.4E-02	4.9E-01	--	--	5.9E-01	6.6E+00	--	--	4.4E-03	4.9E-02	--	--	5.9E-02	6.6E-01	--	--	**5.9E-02**	**6.6E-01**
Benzo (b) fluoranthene [C]	0	--	--	4.4E-02	4.9E-01	--	--	5.9E-01	6.6E+00	--	--	4.4E-03	4.9E-02	--	--	5.9E-02	6.6E-01	--	--	**5.9E-02**	**6.6E-01**
Benzo (k) fluoranthene [C]	0	--	--	4.4E-02	4.9E-01	--	--	5.9E-01	6.6E+00	--	--	4.4E-03	4.9E-02	--	--	5.9E-02	6.6E-01	--	--	**5.9E-02**	**6.6E-01**
Benzo (a) pyrene [C]	0	--	--	4.4E-02	4.9E-01	--	--	5.9E-01	6.6E+00	--	--	4.4E-03	4.9E-02	--	--	5.9E-02	6.6E-01	--	--	**5.9E-02**	**6.6E-01**
Bis2-Chloroethyl Ether	0	--	--	3.1E-01	1.4E+01	--	--	1.8E+00	7.9E+01	--	--	3.1E-02	1.4E+00	--	--	1.8E-01	7.9E+00	--	--	**1.8E-01**	**7.9E+00**
Bis2-Chloroisopropyl Ether	0	--	--	1.4E+03	1.7E+05	--	--	7.9E+03	9.6E+05	--	--	1.4E+02	1.7E+04	--	--	7.9E+02	9.6E+04	--	--	**7.9E+02**	**9.6E+04**
Bromoform [C]	0	--	--	4.4E+01	3.6E+03	--	--	5.9E+02	4.8E+04	--	--	4.4E+00	3.6E+02	--	--	5.9E+01	4.8E+03	--	--	**5.9E+01**	**4.8E+03**
Butylbenzylphthalate	0	--	--	3.0E+03	5.2E+03	--	--	1.7E+04	2.9E+04	--	--	3.0E+02	5.2E+02	--	--	1.7E+03	2.9E+03	--	--	**1.7E+03**	**2.9E+03**
Cadmium	0	2.0E+00	6.9E-01	5.0E+00	--	5.6E+00	2.1E+00	2.8E+01	--	5.0E-01	1.7E-01	5.0E-01	--	1.4E+00	5.3E-01	2.8E+00	--	**1.4E+00**	**5.3E-01**	**2.8E+00**	--
Carbon Tetrachloride [C]	0	--	--	2.5E+00	4.4E+01	--	--	3.4E+01	5.9E+02	--	--	2.5E-01	4.4E+00	--	--	3.4E+00	5.9E+01	--	--	**3.4E+00**	**5.9E+01**
Chlordane [C]	0	2.4E+00	4.3E-03	2.1E-02	2.2E-02	6.7E+00	1.3E-02	2.8E-01	3.0E-01	6.0E-01	1.1E-03	2.1E-03	2.2E-03	1.7E+00	3.3E-03	2.8E-02	3.0E-02	**1.7E+00**	**3.3E-03**	**2.8E-02**	**3.0E-02**
Chloride	0	8.6E+05	2.3E+05	2.5E+05	--	2.4E+06	7.1E+05	1.4E+06	--	2.2E+05	5.8E+04	2.5E+04	--	6.0E+05	1.8E+05	1.4E+05	--	**6.0E+05**	**1.8E+05**	**1.4E+05**	--
TRC	0	1.9E+01	1.1E+01	--	--	5.3E+01	3.4E+01	--	--	4.8E+00	2.8E+00	--	--	1.3E+01	8.4E+00	--	--	**1.3E+01**	**8.4E+00**	--	--
Chlorobenzene	0	--	--	6.8E+02	2.1E+04	--	--	3.9E+03	1.2E+05	--	--	6.8E+01	2.1E+03	--	--	3.9E+02	1.2E+04	--	--	**3.9E+02**	**1.2E+04**

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane [C]	0	--	--	4.1E+00	3.4E+02	--	--	5.5E+01	4.6E+03	--	--	4.1E-01	3.4E+01	--	--	5.5E+00	4.6E+02	--	--	5.5E+00	4.6E+02
Chloroform [C]	0	--	--	3.5E+02	2.9E+04	--	--	4.7E+03	3.9E+05	--	--	3.5E+01	2.9E+03	--	--	4.7E+02	3.9E+04	--	--	4.7E+02	3.9E+04
2-Chloronaphthalene	0	--	--	1.7E+03	4.3E+03	--	--	9.6E+03	2.4E+04	--	--	1.7E+02	4.3E+02	--	--	9.6E+02	2.4E+03	--	--	9.6E+02	2.4E+03
2-Chlorophenol	0	--	--	1.2E+02	4.0E+02	--	--	6.8E+02	2.3E+03	--	--	1.2E+01	4.0E+01	--	--	6.8E+01	2.3E+02	--	--	6.8E+01	2.3E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	--	--	2.3E-01	1.3E-01	--	--	2.1E-02	1.0E-02	--	--	5.8E-02	3.1E-02	--	--	5.8E-02	3.1E-02	--	--
Chromium III	0	3.5E+02	4.4E+01	--	--	9.7E+02	1.3E+02	--	--	8.8E+01	1.1E+01	--	--	2.4E+02	3.4E+01	--	--	2.4E+02	3.4E+01	--	--
Chromium VI	0	1.6E+01	1.1E+01	--	--	4.4E+01	3.4E+01	--	--	4.0E+00	2.8E+00	--	--	1.1E+01	8.4E+00	--	--	1.1E+01	8.4E+00	--	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	5.7E+02	--	--	--	1.0E+01	--	--	--	5.7E+01	--	--	--	5.7E+01	--
Chrysene [C]	0	--	--	4.4E-02	4.9E-01	--	--	5.9E-01	6.6E+00	--	--	4.4E-03	4.9E-02	--	--	5.9E-02	6.6E-01	--	--	5.9E-02	6.6E-01
Copper	0	7.7E+00	5.2E+00	1.3E+03	--	2.1E+01	1.6E+01	7.4E+03	--	1.9E+00	1.3E+00	1.3E+02	--	5.3E+00	4.0E+00	7.4E+02	--	5.3E+00	4.0E+00	7.4E+02	--
Cyanide	0	2.2E+01	5.2E+00	7.0E+02	2.2E+05	6.1E+01	1.6E+01	4.0E+03	1.2E+06	5.5E+00	1.3E+00	7.0E+01	2.2E+04	1.5E+01	4.0E+00	4.0E+02	1.2E+05	1.5E+01	4.0E+00	4.0E+02	1.2E+05
DDD [C]	0	--	--	8.3E-03	8.4E-03	--	--	1.1E-01	1.1E-01	--	--	8.3E-04	8.4E-04	--	--	1.1E-02	1.1E-02	--	--	1.1E-02	1.1E-02
DDE [C]	0	--	--	5.9E-03	5.9E-03	--	--	7.9E-02	7.9E-02	--	--	5.9E-04	5.9E-04	--	--	7.9E-03	7.9E-03	--	--	7.9E-03	7.9E-03
DDT [C]	0	1.1E+00	1.0E-03	5.9E-03	5.9E-03	3.1E+00	3.1E-03	7.9E-02	7.9E-02	2.8E-01	2.5E-04	5.9E-04	5.9E-04	7.6E-01	7.7E-04	7.9E-03	7.9E-03	7.6E-01	7.7E-04	7.9E-03	7.9E-03
Demeton	0	--	1.0E-01	--	--	--	3.1E-01	--	--	--	2.5E-02	--	--	--	7.7E-02	--	--	--	7.7E-02	--	--
Dibenz(a,h)anthracene [C]	0	--	--	4.4E-02	4.9E-01	--	--	5.9E-01	6.6E+00	--	--	4.4E-03	4.9E-02	--	--	5.9E-02	6.6E-01	--	--	5.9E-02	6.6E-01
Dibutyl phthalate	0	--	--	2.7E+03	1.2E+04	--	--	1.5E+04	6.8E+04	--	--	2.7E+02	1.2E+03	--	--	1.5E+03	6.8E+03	--	--	1.5E+03	6.8E+03
Dichloromethane (Methylene Chloride) [C]	0	--	--	4.7E+01	1.6E+04	--	--	6.3E+02	2.2E+05	--	--	4.7E+00	1.6E+03	--	--	6.3E+01	2.2E+04	--	--	6.3E+01	2.2E+04
1,2-Dichlorobenzene	0	--	--	2.7E+03	1.7E+04	--	--	1.5E+04	9.6E+04	--	--	2.7E+02	1.7E+03	--	--	1.5E+03	9.6E+03	--	--	1.5E+03	9.6E+03
1,3-Dichlorobenzene	0	--	--	4.0E+02	2.6E+03	--	--	2.3E+03	1.5E+04	--	--	4.0E+01	2.6E+02	--	--	2.3E+02	1.5E+03	--	--	2.3E+02	1.5E+03
1,4-Dichlorobenzene	0	--	--	4.0E+02	2.6E+03	--	--	2.3E+03	1.5E+04	--	--	4.0E+01	2.6E+02	--	--	2.3E+02	1.5E+03	--	--	2.3E+02	1.5E+03
3,3-Dichlorobenzidine [C]	0	--	--	4.0E-01	7.7E-01	--	--	5.4E+00	1.0E+01	--	--	4.0E-02	7.7E-02	--	--	5.4E-01	1.0E+00	--	--	5.4E-01	1.0E+00
Dichlorobromomethane [C]	0	--	--	5.6E+00	4.6E+02	--	--	7.5E+01	6.2E+03	--	--	5.6E-01	4.6E+01	--	--	7.5E+00	6.2E+02	--	--	7.5E+00	6.2E+02
1,2-Dichloroethane [C]	0	--	--	3.8E+00	9.9E+02	--	--	5.1E+01	1.3E+04	--	--	3.8E-01	9.9E+01	--	--	5.1E+00	1.3E+03	--	--	5.1E+00	1.3E+03
1,1-Dichloroethylene	0	--	--	3.1E+02	1.7E+04	--	--	1.8E+03	9.6E+04	--	--	3.1E+01	1.7E+03	--	--	1.8E+02	9.6E+03	--	--	1.8E+02	9.6E+03
1,2-trans-dichloroethylene	0	--	--	7.0E+02	1.4E+05	--	--	4.0E+03	7.9E+05	--	--	7.0E+01	1.4E+04	--	--	4.0E+02	7.9E+04	--	--	4.0E+02	7.9E+04
2,4-Dichlorophenol	0	--	--	9.3E+01	7.9E+02	--	--	5.3E+02	4.5E+03	--	--	9.3E+00	7.9E+01	--	--	5.3E+01	4.5E+02	--	--	5.3E+01	4.5E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	1.0E+02	--	--	--	5.7E+02	--	--	--	1.0E+01	--	--	--	5.7E+01	--	--	--	5.7E+01	--
1,2-Dichloropropane [C]	0	--	--	5.2E+00	3.9E+02	--	--	7.0E+01	5.2E+03	--	--	5.2E-01	3.9E+01	--	--	7.0E+00	5.2E+02	--	--	7.0E+00	5.2E+02
1,3-Dichloropropene	0	--	--	1.0E+01	1.7E+03	--	--	5.7E+01	9.6E+03	--	--	1.0E+00	1.7E+02	--	--	5.7E+00	9.6E+02	--	--	5.7E+00	9.6E+02
Dieldrin [C]	0	2.4E-01	5.6E-02	1.4E-03	1.4E-03	6.7E-01	1.7E-01	1.9E-02	1.9E-02	6.0E-02	1.4E-02	1.4E-04	1.4E-04	1.7E-01	4.3E-02	1.9E-03	1.9E-03	1.7E-01	4.3E-02	1.9E-03	1.9E-03
Diethyl Phthalate	0	--	--	2.3E+04	1.2E+05	--	--	1.3E+05	6.8E+05	--	--	2.3E+03	1.2E+04	--	--	1.3E+04	6.8E+04	--	--	1.3E+04	6.8E+04
Di-2-Ethylhexyl Phthalate [C]	0	--	--	1.8E+01	5.9E+01	--	--	2.4E+02	7.9E+02	--	--	1.8E+00	5.9E+00	--	--	2.4E+01	7.9E+01	--	--	2.4E+01	7.9E+01
2,4-Dimethylphenol	0	--	--	5.4E+02	2.3E+03	--	--	3.1E+03	1.3E+04	--	--	5.4E+01	2.3E+02	--	--	3.1E+02	1.3E+03	--	--	3.1E+02	1.3E+03
Dimethyl Phthalate	0	--	--	3.1E+05	2.9E+06	--	--	1.8E+06	1.6E+07	--	--	3.1E+04	2.9E+05	--	--	1.8E+05	1.6E+06	--	--	1.8E+05	1.6E+06
Di-n-Butyl Phthalate	0	--	--	2.7E+03	1.2E+04	--	--	1.5E+04	6.8E+04	--	--	2.7E+02	1.2E+03	--	--	1.5E+03	6.8E+03	--	--	1.5E+03	6.8E+03
2,4 Dinitrophenol	0	--	--	7.0E+01	1.4E+04	--	--	4.0E+02	7.9E+04	--	--	7.0E+00	1.4E+03	--	--	4.0E+01	7.9E+03	--	--	4.0E+01	7.9E+03
2-Methyl-4,6-Dinitrophenol	0	--	--	1.3E+01	7.65E+02	--	--	7.6E+01	4.3E+03	--	--	1.3E+00	7.7E+01	--	--	7.6E+00	4.3E+02	--	--	7.6E+00	4.3E+02
2,4-Dinitrotoluene [C]	0	--	--	1.1E+00	9.1E+01	--	--	1.5E+01	1.2E+03	--	--	1.1E-01	9.1E+00	--	--	1.5E+00	1.2E+02	--	--	1.5E+00	1.2E+02
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	1.2E-06	1.2E-06	--	--	2.5E-05	2.5E-05	--	--	1.2E-07	1.2E-07	--	--	2.5E-06	2.5E-06	--	--	2.5E-06	2.5E-06
1,2-Diphenylhydrazine [C]	0	--	--	4.0E-01	5.4E+00	--	--	5.4E+00	7.3E+01	--	--	4.0E-02	5.4E-01	--	--	5.4E-01	7.3E+00	--	--	5.4E-01	7.3E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	1.1E+02	2.4E+02	6.1E-01	1.7E-01	6.2E+02	1.4E+03	5.5E-02	1.4E-02	1.1E+01	2.4E+01	1.5E-01	4.3E-02	6.2E+01	1.4E+02	1.5E-01	4.3E-02	6.2E+01	1.4E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	1.1E+02	2.4E+02	6.1E-01	1.7E-01	6.2E+02	1.4E+03	5.5E-02	1.4E-02	1.1E+01	2.4E+01	1.5E-01	4.3E-02	6.2E+01	1.4E+02	1.5E-01	4.3E-02	6.2E+01	1.4E+02
Endosulfan Sulfate	0	--	--	1.1E+02	2.4E+02	--	--	6.2E+02	1.4E+03	--	--	1.1E+01	2.4E+01	--	--	6.2E+01	1.4E+02	--	--	6.2E+01	1.4E+02
Endrin	0	8.6E-02	3.6E-02	7.6E-01	8.1E-01	2.4E-01	1.1E-01	4.3E+00	4.6E+00	2.2E-02	9.0E-03	7.6E-02	8.1E-02	6.0E-02	2.8E-02	4.3E-01	4.6E-01	6.0E-02	2.8E-02	4.3E-01	4.6E-01
Endrin Aldehyde	0	--	--	7.6E-01	8.1E-01	--	--	4.3E+00	4.6E+00	--	--	7.6E-02	8.1E-02	--	--	4.3E-01	4.6E-01	--	--	4.3E-01	4.6E-01

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	3.1E+03	2.9E+04	--	--	1.8E+04	1.6E+05	--	--	3.1E+02	2.9E+03	--	--	1.8E+03	1.6E+04	--	--	**1.8E+03**	**1.6E+04**
Fluoranthene	0	--	--	3.0E+02	3.7E+02	--	--	1.7E+03	2.1E+03	--	--	3.0E+01	3.7E+01	--	--	1.7E+02	2.1E+02	--	--	**1.7E+02**	**2.1E+02**
Fluorene	0	--	--	1.3E+03	1.4E+04	--	--	7.4E+03	7.9E+04	--	--	1.3E+02	1.4E+03	--	--	7.4E+02	7.9E+03	--	--	**7.4E+02**	**7.9E+03**
Foaming Agents	0	--	--	5.0E+02	--	--	--	2.8E+03	--	--	--	5.0E+01	--	--	--	2.8E+02	--	--	--	**2.8E+02**	--
Guthion	0	--	1.0E-02	--	--	--	3.1E-02	--	--	--	2.5E-03	--	--	--	7.7E-03	--	--	--	**7.7E-03**	--	--
Heptachlor [c]	0	5.2E-01	3.8E-03	2.1E-03	2.1E-03	1.4E+00	1.2E-02	2.8E-02	2.8E-02	1.3E-01	9.5E-04	2.1E-04	2.1E-04	3.6E-01	2.9E-03	2.8E-03	2.8E-03	**3.6E-01**	**2.9E-03**	**2.8E-03**	**2.8E-03**
Heptachlor Epoxide[c]	0	5.2E-01	3.8E-03	1.0E-03	1.1E-03	1.4E+00	1.2E-02	1.3E-02	1.5E-02	1.3E-01	9.5E-04	1.0E-04	1.1E-04	3.6E-01	2.9E-03	1.3E-03	1.5E-03	**3.6E-01**	**2.9E-03**	**1.3E-03**	**1.5E-03**
Hexachlorobenzene[c]	0	--	--	7.5E-03	7.7E-03	--	--	1.0E-01	1.0E-01	--	--	7.5E-04	7.7E-04	--	--	1.0E-02	1.0E-02	--	--	**1.0E-02**	**1.0E-02**
Hexachlorobutadiene[c]	0	--	--	4.4E+00	5.0E+02	--	--	5.9E+01	6.7E+03	--	--	4.4E-01	5.0E+01	--	--	5.9E+00	6.7E+02	--	--	**5.9E+00**	**6.7E+02**
Hexachlorocyclohexane Alpha-BHC[c]	0	--	--	3.9E-02	1.3E-01	--	--	5.2E-01	1.7E+00	--	--	3.9E-03	1.3E-02	--	--	5.2E-02	1.7E-01	--	--	**5.2E-02**	**1.7E-01**
Hexachlorocyclohexane Beta-BHC[c]	0	--	--	1.4E-01	4.6E-01	--	--	1.9E+00	6.2E+00	--	--	1.4E-02	4.6E-02	--	--	1.9E-01	6.2E-01	--	--	**1.9E-01**	**6.2E-01**
Hexachlorocyclohexane Gamma-BHC[c] (Lindane)	0	9.5E-01	--	1.9E-01	6.3E-01	2.6E+00	--	2.6E+00	8.5E+00	2.4E-01	--	1.9E-02	6.3E-02	6.6E-01	--	2.6E-01	8.5E-01	**6.6E-01**	--	**2.6E-01**	**8.5E-01**
Hexachlorocyclopentadiene	0	--	--	2.4E+02	1.7E+04	--	--	1.4E+03	9.6E+04	--	--	2.4E+01	1.7E+03	--	--	1.4E+02	9.6E+03	--	--	**1.4E+02**	**9.6E+03**
Hexachloroethane[c]	0	--	--	1.9E+01	8.9E+01	--	--	2.6E+02	1.2E+03	--	--	1.9E+00	8.9E+00	--	--	2.6E+01	1.2E+02	--	--	**2.6E+01**	**1.2E+02**
Hydrogen Sulfide	0	--	2.0E+00	--	--	--	6.1E+00	--	--	--	5.0E-01	--	--	--	1.5E+00	--	--	--	**1.5E+00**	--	--
Indeno (1,2,3-cd) pyrene [c]	0	--	--	4.4E-02	4.9E-01	--	--	5.9E-01	6.6E+00	--	--	4.4E-03	4.9E-02	--	--	5.9E-02	6.6E-01	--	--	**5.9E-02**	**6.6E-01**
Iron	0	--	--	3.0E+02	--	--	--	1.7E+03	--	--	--	3.0E+01	--	--	--	1.7E+02	--	--	--	**1.7E+02**	--
Isophorone[c]	0	--	--	3.6E+02	2.6E+04	--	--	4.8E+03	3.5E+05	--	--	3.6E+01	2.6E+03	--	--	4.8E+02	3.5E+04	--	--	**4.8E+02**	**3.5E+04**
Kepone	0	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--	--	**0.0E+00**	--	--
Lead	0	5.6E+01	6.0E+00	1.5E+01	--	1.6E+02	1.8E+01	8.5E+01	--	1.4E+01	1.5E+00	1.5E+00	--	3.9E+01	4.6E+00	8.5E+00	--	**3.9E+01**	**4.6E+00**	**8.5E+00**	--
Malathion	0	--	1.0E-01	--	--	--	3.1E-01	--	--	--	2.5E-02	--	--	--	7.7E-02	--	--	--	**7.7E-02**	--	--
Manganese	0	--	--	5.0E+01	--	--	--	2.8E+02	--	--	--	5.0E+00	--	--	--	2.8E+01	--	--	--	**2.8E+01**	--
Mercury	0	1.4E+00	7.7E-01	5.0E-02	5.1E-02	3.9E+00	2.4E+00	2.8E-01	2.9E-01	3.5E-01	1.9E-01	5.0E-03	5.1E-03	9.7E-01	5.9E-01	2.8E-02	2.9E-02	**9.7E-01**	**5.9E-01**	**2.8E-02**	**2.9E-02**
Methyl Bromide	0	--	--	4.8E+01	4.0E+03	--	--	2.7E+02	2.3E+04	--	--	4.8E+00	4.0E+02	--	--	2.7E+01	2.3E+03	--	--	**2.7E+01**	**2.3E+03**
Methoxychlor	0	--	3.0E-02	1.0E+02	--	--	9.2E-02	5.7E+02	--	--	7.5E-03	1.0E+01	--	--	2.3E-02	5.7E+01	--	--	**2.3E-02**	**5.7E+01**	--
Mirex	0	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--	--	0.0E+00	--	--	--	**0.0E+00**	--	--
Monochlorobenzene	0	--	--	6.8E+02	2.1E+04	--	--	3.9E+03	1.2E+05	--	--	6.8E+01	2.1E+03	--	--	3.9E+02	1.2E+04	--	--	**3.9E+02**	**1.2E+04**
Nickel	0	1.1E+02	1.2E+01	6.1E+02	4.6E+03	3.1E+02	3.6E+01	3.5E+03	2.6E+04	2.8E+01	3.0E+00	6.1E+01	4.6E+02	7.7E+01	9.1E+00	3.5E+02	2.6E+03	**7.7E+01**	**9.1E+00**	**3.5E+02**	**2.6E+03**
Nitrate (as N)	0	--	--	1.0E+04	--	--	--	5.7E+04	--	--	--	1.0E+03	--	--	--	5.7E+03	--	--	--	**5.7E+03**	--
Nitrobenzene	0	--	--	1.7E+01	1.9E+03	--	--	9.6E+01	1.1E+04	--	--	1.7E+00	1.9E+02	--	--	9.6E+00	1.1E+03	--	--	**9.6E+00**	**1.1E+03**
N-Nitrosodimethylamine[c]	0	--	--	6.9E-03	8.1E+01	--	--	9.3E-02	1.1E+03	--	--	6.9E-04	8.1E+00	--	--	9.3E-03	1.1E+02	--	--	**9.3E-03**	**1.1E+02**
N-Nitrosodiphenylamine[c]	0	--	--	5.0E+01	1.6E+02	--	--	6.7E+02	2.2E+03	--	--	5.0E+00	1.6E+01	--	--	6.7E+01	2.2E+02	--	--	**6.7E+01**	**2.2E+02**
N-Nitrosodi-n-propylamine[c]	0	--	--	5.0E-02	1.4E+01	--	--	6.7E-01	1.9E+02	--	--	5.0E-03	1.4E+00	--	--	6.7E-02	1.9E+01	--	--	**6.7E-02**	**1.9E+01**
Parathion	0	6.5E-02	1.3E-02	--	--	1.8E-01	4.0E-02	--	--	1.6E-02	3.3E-03	--	--	4.5E-02	1.0E-02	--	--	**4.5E-02**	**1.0E-02**	--	--
PCB-1016	0	--	1.4E-02	--	--	--	4.3E-02	--	--	--	3.5E-03	--	--	--	1.1E-02	--	--	--	**1.1E-02**	--	--
PCB-1221	0	--	1.4E-02	--	--	--	4.3E-02	--	--	--	3.5E-03	--	--	--	1.1E-02	--	--	--	**1.1E-02**	--	--
PCB-1232	0	--	1.4E-02	--	--	--	4.3E-02	--	--	--	3.5E-03	--	--	--	1.1E-02	--	--	--	**1.1E-02**	--	--
PCB-1242	0	--	1.4E-02	--	--	--	4.3E-02	--	--	--	3.5E-03	--	--	--	1.1E-02	--	--	--	**1.1E-02**	--	--
PCB-1248	0	--	1.4E-02	--	--	--	4.3E-02	--	--	--	3.5E-03	--	--	--	1.1E-02	--	--	--	**1.1E-02**	--	--
PCB-1254	0	--	1.4E-02	--	--	--	4.3E-02	--	--	--	3.5E-03	--	--	--	1.1E-02	--	--	--	**1.1E-02**	--	--
PCB-1260	0	--	1.4E-02	--	--	--	4.3E-02	--	--	--	3.5E-03	--	--	--	1.1E-02	--	--	--	**1.1E-02**	--	--
PCB Total[c]	0	--	--	1.7E-03	1.7E-03	--	--	2.3E-02	2.3E-02	--	--	1.7E-04	1.7E-04	--	--	2.3E-03	2.3E-03	--	--	**2.3E-03**	**2.3E-03**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Pentachlorophenol [C]	0	1.3E+01	1.0E+01	2.8E+00	8.2E+01	3.6E+01	3.1E+01	3.8E+01	1.1E+03	3.2E+00	2.5E+00	2.8E-01	8.2E+00	9.0E+00	7.7E+00	3.8E+00	1.1E+02	**9.0E+00**	**7.7E+00**	**3.8E+00**	**1.1E+02**
Phenol	0	--	--	2.1E+04	4.6E+06	--	--	1.2E+05	2.6E+07	--	--	2.1E+03	4.6E+05	--	--	1.2E+04	2.6E+06	**--**	**--**	**1.2E+04**	**2.6E+06**
Pyrene	0	--	--	9.6E+02	1.1E+04	--	--	5.4E+03	6.2E+04	--	--	9.6E+01	1.1E+03	--	--	5.4E+02	6.2E+03	**--**	**--**	**5.4E+02**	**6.2E+03**
Radionuclides (pCi/l except Beta/Photon)	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**--**	**--**	**--**	**--**
Gross Alpha Activity	0	--	--	1.5E+01	1.5E+01	--	--	8.5E+01	8.5E+01	--	--	1.5E+00	1.5E+00	--	--	8.5E+00	8.5E+00	**--**	**--**	**8.5E+00**	**8.5E+00**
Beta and Photon Activity (mrem/yr)	0	--	--	4.0E+00	4.0E+00	--	--	2.3E+01	2.3E+01	--	--	4.0E-01	4.0E-01	--	--	2.3E+00	2.3E+00	**--**	**--**	**2.3E+00**	**2.3E+00**
Strontium-90	0	--	--	8.0E+00	8.0E+00	--	--	4.5E+01	4.5E+01	--	--	8.0E-01	8.0E-01	--	--	4.5E+00	4.5E+00	**--**	**--**	**4.5E+00**	**4.5E+00**
Tritium	0	--	--	2.0E+04	2.0E+04	--	--	1.1E+05	1.1E+05	--	--	2.0E+03	2.0E+03	--	--	1.1E+04	1.1E+04	**--**	**--**	**1.1E+04**	**1.1E+04**
Selenium	0	2.0E+01	5.0E+00	1.7E+02	1.1E+04	5.6E+01	1.5E+01	9.6E+02	6.2E+04	5.0E+00	1.3E+00	1.7E+01	1.1E+03	1.4E+01	3.8E+00	9.6E+01	6.2E+03	**1.4E+01**	**3.8E+00**	**9.6E+01**	**6.2E+03**
Silver	0	1.2E+00	--	--	--	3.4E+00	--	--	--	3.1E-01	--	--	--	8.6E-01	--	--	--	**8.6E-01**	**--**	**--**	**--**
Sulfate	0	--	--	2.5E+05	--	--	--	1.4E+06	--	--	--	2.5E+04	--	--	--	1.4E+05	--	**--**	**--**	**1.4E+05**	**--**
1,1,2,2-Tetrachloroethane [C]	0	--	--	1.7E+00	1.1E+02	--	--	2.3E+01	1.5E+03	--	--	1.7E-01	1.1E+01	--	--	2.3E+00	1.5E+02	**--**	**--**	**2.3E+00**	**1.5E+02**
Tetrachloroethylene [C]	0	--	--	8.0E+00	8.9E+01	--	--	1.1E+02	1.2E+03	--	--	8.0E-01	8.9E+00	--	--	1.1E+01	1.2E+02	**--**	**--**	**1.1E+01**	**1.2E+02**
Thallium	0	--	--	1.7E+00	6.3E+00	--	--	9.6E+00	3.6E+01	--	--	1.7E-01	6.3E-01	--	--	9.6E-01	3.6E+00	**--**	**--**	**9.6E-01**	**3.6E+00**
Toluene	0	--	--	6.8E+03	2.0E+05	--	--	3.9E+04	1.1E+06	--	--	6.8E+02	2.0E+04	--	--	3.9E+03	1.1E+05	**--**	**--**	**3.9E+03**	**1.1E+05**
Total dissolved solids	0	--	--	5.0E+05	--	--	--	2.8E+06	--	--	--	5.0E+04	--	--	--	2.8E+05	--	**--**	**--**	**2.8E+05**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	7.3E-03	7.5E-03	2.0E+00	6.1E-04	9.8E-02	1.0E-01	1.8E-01	5.0E-05	7.3E-04	7.5E-04	5.1E-01	1.5E-04	9.8E-03	1.0E-02	**5.1E-01**	**1.5E-04**	**9.8E-03**	**1.0E-02**
Tributyltin	0	4.6E-01	6.3E-02	--	--	1.3E+00	1.9E-01	--	--	1.2E-01	1.6E-02	--	--	3.2E-01	4.8E-02	--	--	**3.2E-01**	**4.8E-02**	**--**	**--**
1,2,4-Trichlorobenzene	0	--	--	2.6E+02	9.4E+02	--	--	1.5E+03	5.3E+03	--	--	2.6E+01	9.4E+01	--	--	1.5E+02	5.3E+02	**--**	**--**	**1.5E+02**	**5.3E+02**
1,1,2-Trichloroethane [C]	0	--	--	6.0E+00	4.2E+02	--	--	8.1E+01	5.6E+03	--	--	6.0E-01	4.2E+01	--	--	8.1E+00	5.6E+02	**--**	**--**	**8.1E+00**	**5.6E+02**
Trichloroethylene [C]	0	--	--	2.7E+01	8.1E+02	--	--	3.6E+02	1.1E+04	--	--	2.7E+00	8.1E+01	--	--	3.6E+01	1.1E+03	**--**	**--**	**3.6E+01**	**1.1E+03**
2,4,6-Trichlorophenol [C]	0	--	--	2.1E+01	6.5E+01	--	--	2.8E+02	8.7E+02	--	--	2.1E+00	6.5E+00	--	--	2.8E+01	8.7E+01	**--**	**--**	**2.8E+01**	**8.7E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	5.0E+01	--	--	--	2.8E+02	--	--	--	5.0E+00	--	--	--	2.8E+01	--	**--**	**--**	**2.8E+01**	**--**
Vinyl Chloride [C]	0	--	--	2.3E-01	6.1E+01	--	--	3.1E+00	8.2E+02	--	--	2.3E-02	6.1E+00	--	--	3.1E-01	8.2E+01	**--**	**--**	**3.1E-01**	**8.2E+01**
Zinc	0	7.1E+01	6.9E+01	9.1E+03	6.9E+04	2.0E+02	2.1E+02	5.2E+04	3.9E+05	1.8E+01	1.7E+01	9.1E+02	6.9E+03	4.9E+01	5.3E+01	5.2E+03	3.9E+04	**4.9E+01**	**5.3E+01**	**5.2E+03**	**3.9E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	7.9E+00
Arsenic	5.7E+00
Barium	1.1E+03
Cadmium	3.2E-01
Chromium III	2.0E+01
Chromium VI	4.4E+00
Copper	2.1E+00
Iron	1.7E+02
Lead	2.8E+00
Manganese	2.8E+01
Mercury	2.8E-02
Nickel	5.4E+00
Selenium	2.3E+00
Silver	3.4E-01
Zinc	2.0E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Revised 2/2003

State "FY2003 Transmittal Checklist" to Assist in Targeting Municipal and Industrial Individual NPDES Draft Permits for Review

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name: Otter River Elementary School STP

NPDES Permit Number: VA0020851

Permit Writer Name: Kevin A. Harlow

Date: May 19, 2008

Major [ ] **Minor** [X] **Industrial** [ ] **Municipal** [X]

I.A. Draft Permit Package Submittal Includes:	Yes	No	N/A
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?		X	
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?	X		
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?	X		
8. Whole Effluent Toxicity Test summary and analysis?		X	
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics	Yes	No	N/A
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet **or** permit contain a description of the wastewater treatment process?	X		

I.B. Permit/Facility Characteristics – cont. (FY2003)	Yes	No	N/A
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		X	
5. Has there been any change in streamflow characteristics since the last permit was developed?		X	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet **or** permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?	X		
a. Has a TMDL been developed and approved by EPA for the impaired water?	X		
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?		X	
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?	X		
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?		X	
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		X	
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		X	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist (FY2003)

Region III NPDES Permit Quality Checklist – for POTWs

(To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit?	X		

II.C. Technology-Based Effluent Limits (POTWs)	Yes	No	N/A
1. Does the permit contain numeric limits for ALL of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	X		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			X
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?	X		

II.D. Water Quality-Based Effluent Limits – cont. (FY2003)	Yes	No	N/A
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?	X		
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?	X		
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?	X		
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the record indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?		X	
4. Does the permit require testing for Whole Effluent Toxicity?		X	

II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?			X
2. Does the permit include appropriate storm water program requirements?			X

II.F. Special Conditions – cont. (FY2003)	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	X		
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?		X	
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?		X	
a. Does the permit require implementation of the "Nine Minimum Controls"?			X
b. Does the permit require development and implementation of a "Long Term Control Plan"?			X
c. Does the permit require monitoring and reporting for CSO events?			X
7. Does the permit include appropriate Pretreatment Program requirements?	X		

II.G. Standard Conditions	Yes	No	N/A
1. Does the **permit** contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	X		

List of Standard Conditions – 40 CFR 122.41

Duty to comply
Duty to reapply
Need to halt or reduce activity not a defense
Duty to mitigate
Proper O & M
Permit actions
Property rights
Duty to provide information
Inspections and entry
Monitoring and records
Signatory requirement
Bypass
Upset
Reporting Requirements
Planned change
Anticipated noncompliance
Transfers
Monitoring reports
Compliance schedules
24-Hour reporting
Other non-compliance

2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?	X		

Part III. Signature Page (FY2003)

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	Kevin A. Harlow
Title	Environmental Engineer, Sr.
Signature	
Date	May 19, 2008